ORDER NO. APD8502789

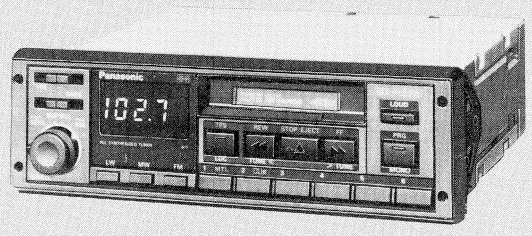
Service Manual

AUTO PRODUCTS

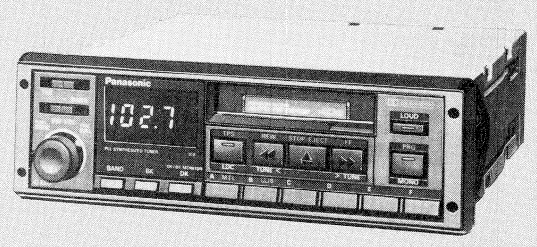
CQ-977EE/EG, CQ-978EG

CASSETTE CAR STEREO TAPE PLAYER with LW/MW/UKW (FM) MPX ELECTRONIC TUNER RADIO

STEREO-CASSETTENSPIELER mit LW/MW/UKW-STEREO ELECTRONISCHER ABSTIMMUNG RADIO



● CQ-977EE/EG



● CQ-978EG

DOLBY SYSTEM ®

*"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
*Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

The difference between CQ-977EE/EG and CQ-978EG is traffic information.
CQ-978EG is added traffcs information.

FEATURES

- Large dual function keys with green/amber (cassette/radio) illumination.
- Dolby B noise reduction.
- Full logic control cassette mechanism with self-test function for superior reliability.
- 9-song TPS automatically skips to desired song in forward or reverse directions.
- 3-color LCD display shows radio frequency and cassette functions.
- Pre-amp output for additional power amp connection and fader for front-rear volume balance control.
- Multi-tuner card saves space and raises reliability; allows more valuable features to be included.
- The function to received the trafic-information broadcast is employed. (CQ-978EG)

MERKMALE

- Große Doppelfunktionstasten mit grün/bernsteinfarbener Beleuchtung (für Cassette/Radiobetrieb).
- Dolby B Rauschunterdrückung.
- Vollogischer Cassettenmechanismus mit Selbsttestfunktion für gesteigerte zuverlässigkeit.
- TPS für 9 Titel springt automatisch in vorwärts-oder Rückwärcsrichtung zum gewünschten Titel.
- 3 Farbiges LCD-Display zeigt Radiofrequenz und Cassettenfunktionen.
- Vorverstärker-Ausgang für zusätzlichen Anschluß eines Leistungsverstärkers und Ausblender für Balance-steuerung vorne/hinten.
- Multi-Tuner Steckkarte spart Platz und steigert die Zuverlässigkeit; erlaubt Einbau von zusätzlichen wert-vollen Merkmalen.
- Die Funktion zum Empfang von Verkehrsfunk-Informationen wird eingesetzt. (CQ-978EG)

Panasonic

Matsushita Electric Trading Co., Ltd.
P. O. Box 288, Central Osaka, Japan

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SPECIFICATIONS*

(Both CQ-977EE/EG, 978EG)

Power Supply:	DC 12 V (11 ~ 16 V) Test Voltage 14.4 V Negative Ground
Tone Controls:	Bass; ±10 dB at 100 Hz Treble; ±10 dB at 10 kHz
Loudness Control:	+10 dB at 100 Hz +6 dB at 10 kHz
Current Consumption:	Less than 2 A (at 0.5 W)
Maximum Power Output:	2 x 20 W (at 4 Ω)
Power Output:	2 x 13 W (DIN45 324, at 4 Ω)
Speaker Impedance:	4 ~ 8 Ω
Battery Back Up Current Consumption:	Less than 2 mA

Car Stereo

Reproduction System:	4-Track, 2-Program Stereo
Tape Speed:	4.76 cm/sec.
FF/Rewind Time:	Less than 90 sec. (C-60)
Frequency Response:	31.5 Hz to 14,000 Hz
Wow/Flutter:	0.12% (WRMS)
Signal/Noise Ratio:	52 dB
Output Voltage:	700 mV (Ref. level; 0 dB)

FM Stereo Radio

Frequency Range:	87.5 ~ 108 MHz
Intermediate Frequency:	10.7 MHz
Maximum Sensitivity:	Less than 4 dB/μV, (S/N 10 dB)
FM Stereo Sensitivity:	Less than 18 dB/μV
Output Voltage:	600 mV (22.5 kHz Dev.)

MW Radio

Frequency Range:	531 ~ 1,602 kHz
Intermediate Frequency:	450 kHz
Maximum Sensitivity:	Less than 26 dB/μV (at 0.5 W)
Output Voltage:	500 mV (30% Mod.)

LW Radio

Frequency Range:	153 ~ 281 kHz
Intermediate Frequency:	450 kHz
Maximum Sensitivity:	Less than 35 dB/μV (at 0.5 W)
Output Voltage:	500 mV (30% Mod.)

Dimensions:**	178 (W) x 150 (D) x 52 (H) mm
Weight:**	1.8 kg

* Specifications subject to change without notice.
** Weight and Dimensions shown are approximate.
*** C-120 tape is not recommended to use.

TECHNISCHE DATEN*

(Beide CQ-977EE/EG, 978EG)

Stromversorgung:	GS 12 V (11 ~ 16 V) Testspannung 14,4 V Batterieklemme negativ an Masse
Klangregler:	Bässe; ±10 dB bei 100 Hz Höhen; ±10 dB bei 10 kHz
Gehörrichtige Frequenzgangkorrektur:	+10 dB bei 100 Hz +6 dB bei 10 kHz
Stromverbrauch:	Weniger als 2 A (bei 0,5 W)
Max. Ausgangsleistung:	2 x 20 W (bei 4 Ω)
Sinus-Ausgangsleistung:	2 x 13 W (DIN45 324, bei 4 Ω)
Lautsprecherimpedanz:	4 ~ 8 Ω
Stromverbrauch Progr. Speicher:	Weniger 2 mA

Stereo-Cassettenspieler

Wiedergabesystem:	Viertelspur-Zweikanal-Stereo
Bandgeschwindigkeit:	4,76 cm/sek.
Vor/Rücklaufdauer:	Weniger als 90 sek. (C-60)
Frequenzgang:	31,5 Hz ~ 14,000 Hz
Gleichlaufschwankungen:	0,12% (WRMS) (Mittelwert, bewertet)
Signal-Rauschabstand:	52 dB
Ausgangsspannung:	700 mV (0 dB)

UKW-Stereo-Empfangsteil

Empfangsbereich:	87,5 ~ 108 MHz
Zwischenfrequenz:	10,7 MHz
Max. Empfindlichkeit:	Weniger als 4 dB/μV (Signal-Rauschabstand 10 dB)
UKW-Stereo Empfindlichkeit:	Weniger als 18 dB/μV
SK/BK Empfindlichkeit:	Weniger als 20 dB/μV
Ausgangsspannung:	600 mV (22,5 kHz Dev.)

MW-Empfangsteil

Empfangsbereich:	531 ~ 1,602 kHz
Zwischenfrequenz:	450 kHz
Max. Empfindlichkeit:	Weniger als 26 dB/μV (bei 0,5 W)
Ausgangsspannung:	500 mV (30% Mod.)

LW-Empfangsteil

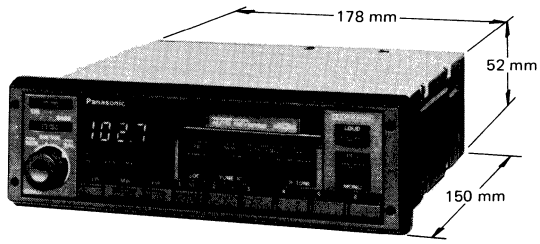
Empfangsbereich:	153 ~ 281 kHz
Zwischenfrequenz:	450 kHz
Max. Empfindlichkeit:	Weniger als 35 dB/μV (bei 0,5 W)
Ausgangsspannung:	500 mV (30% Mod.)

Abmessungen:**	178 (B) x 150 (T) x 52 (H) mm
Gewicht:**	1,8 kg

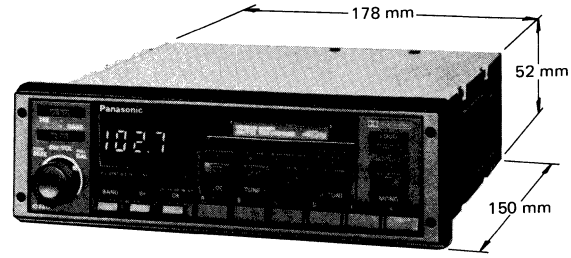
* Änderungen vorbehalten.
** Gewicht und Abmessungen in angenäherten Werten angegeben.
*** C-120-Cassetten sind zu emfehlen.

DIMENSIONS/ABMESSUNGEN

- CQ-977EE/EG



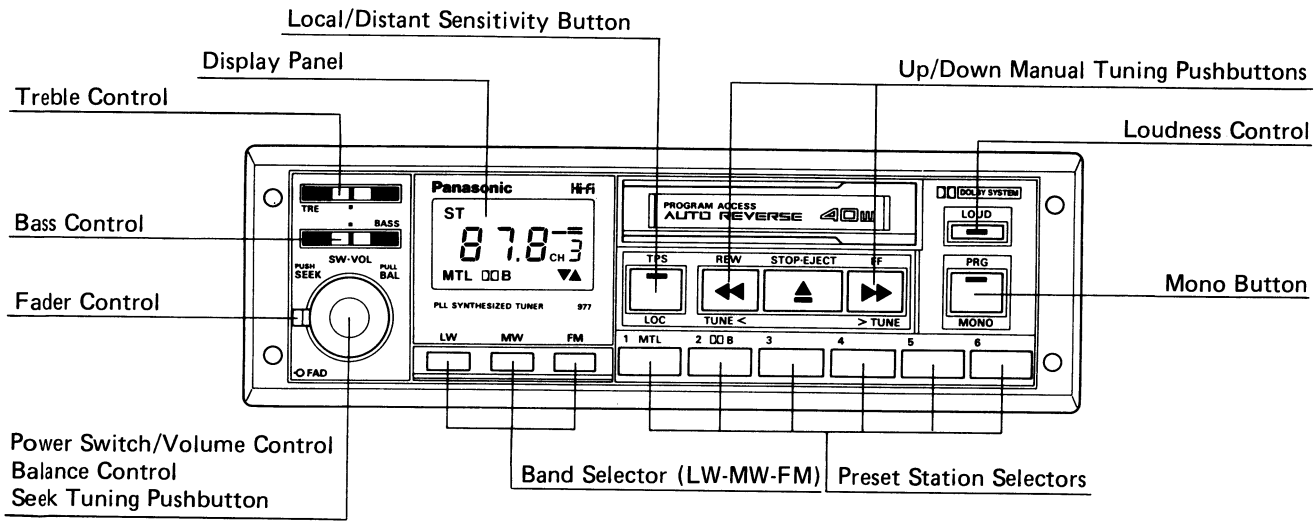
- CQ-978EG



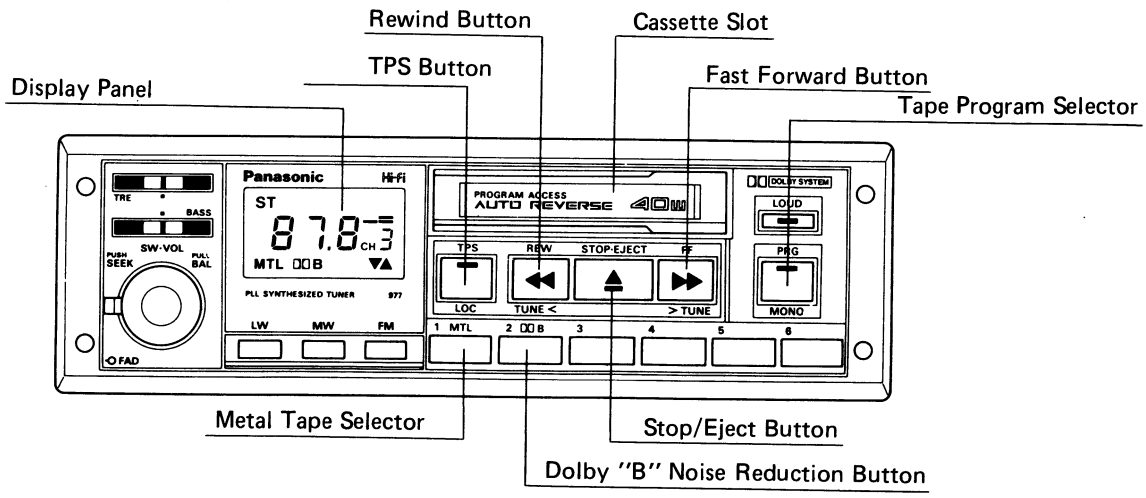
LOCATIONS

(CQ-977EE/EG)

• Main and Radio Controls



• Cassette Controls



FUSE REPLACEMENT SICHERUNG ERSATZ

(CQ-977EE/EG, CQ-978EG)

FUSE REPLACEMENT

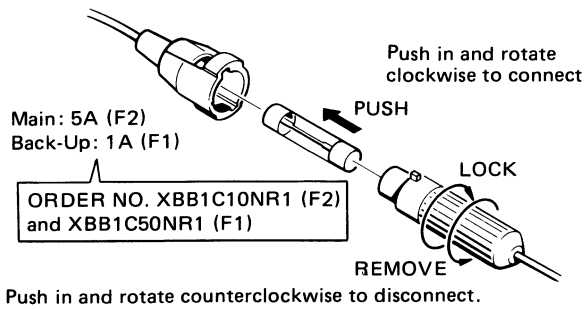
Be sure to use a fuse of specified rating (5A, 1A), when replacing a blown fuse.
Fuses rated at higher capacity, use of any substitute, or connection without a fuse may result in a fire hazard or damage to the unit.
If the replacement fuse fails, contact your nearest authorized panasonic service center.
CAUTION:

1. Connect the BATTERY LEAD (yellow) direct to the battery. Otherwise, time and memory settings can not be done.
2. If battery connection is disconnected (such as during battery replacement, recharging the battery, etc.), all electronic settings proviously done on this unit would fade out. To reset, follow previous instructions on the Operating Instructions.

ERSATZ

Muß die Sicherung erneuert werden, nut Sicherungen mit der gleichen Nenstromstärke (5A, 1A) verwenden. Verwendung von Sicherungen mit höherem Nennwert, oder Ersatzmittel, bzw. Anschluß ohne Sicherung führt zu Feuergefahr oder Beschädigung des Gerätes.
Sollte eine neu eingesetzte Sicherung durchbrennen, wenden Sie sich bitte an Ihren Fachhändler.
ANMERKUNG:

1. Das gelbe BATTERIEKABEL direkt an die Batterie anschließen, de sonst Uhrzeit und Specicher nicht eingestellt werden können.
2. Wenn der Batterieanschluß abgetrennt wird (z.B. beim Auswechseln der Batterie. Aufladen der Batterie usw.) werden alle elektronischen Einstellungen gelöscht. In einem solchen Fall gemäß Anleitungen in diesser Bedienungsanleitung die Einstellungen nochmals durchführen.



MAINTENANCE/WARTUNG

TAPE HEAD CLEANING

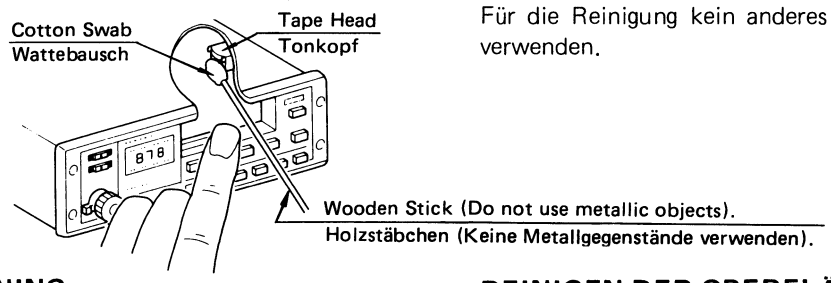
To obtain optimum performance, clean the tape head as often as necessary, depending upon frequency of use and tape cleanliness.
The tape head in the cassette car stereo mechanism can accumulate dust and tape residue, causing poor or wavering sound.

To clean the tape head, open the cassette slot and use a cotton swab, dampened in isopropyl alcohol (or use a commercially available head cleaning tape).
CAUTION:
Do not use any solution other than alcohol for head cleaning.

REINIGEN DES TONKOPFES

Um optimales Leistungsvermögen zu gewährleisten, sollte der Tonkopf regelmäßig, abhängig von der Betriebsdauer und Sauberkeit des Bandes, gereinigt werden.
Der Tonkopf des Autostereocassettenlaufwerkes kann Staub und Bandabrieb sammeln, was sich in schlechter oder schwankender Tonqualität bemerkbar macht.

Um den Tonkopf zu reinigen, den Cassettenschacht öffnen und die Reinigung mit einem in Isopropylalkohol getauchten Wattebausch vornehmen (oder eine im Fachhandel erhältliche Tonkopf-Reinigungscassette verwenden).
VORSICHT:
Für die Reinigung kein anderes Lösungsmittel als Alkohol verwenden.



OUTSIDE CLEANING

To clean the outside of the set (escutcheon and chassis), use a soft cloth to wipe the surface.
Do not use benzine, thinner, or any other type of solvent.

REINIGEN DER OBERFLÄCHE

Um die Oberfläche des Gerätes zu reinigen (Blende und Chassis), ein weiches Tuch verwenden.
Niemals Benzin, Verdünnungsmittel oder andere Lösungsmittel benutzen.

OPERATION OF CONTROLS
(CQ-977EE/EG)

1. Before Use

Before use, make sure to push eject button.

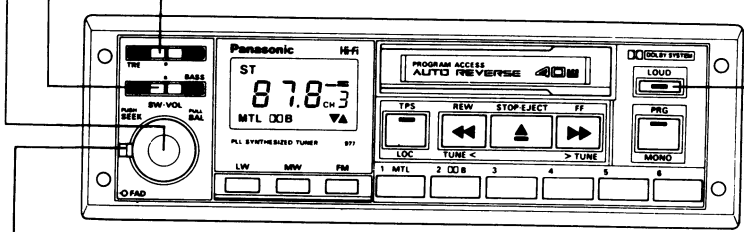
- In some cases, cassette holder will be locked by the shock during transportation.
  After wiring connections and installation are done, push eject button and deck will be ready for use.
- Do not insert cassette until all wiring connections are done.
  This model is equipped with an electronic eject system. Cassette will not eject when power is not on.

2. Main Controls

1. Power Switch/Volume Control/Balance Control (SW-VOL/PULL BAL)
Power switch: Turn the knob clockwise to switch the power to the unit on. The display panel shows the radio frequency. To switch the power to the unit off, turn the knob fully counterclockwise until a click is heard.
Volume control: Adjust volume to the desired level with this knob. Turn the knob clockwise to increase volume; and counterclockwise to decrease volume. For your driving safety, keep the volume level low enough to be aware of road and traffic conditions.
Balance control: To adjust stereo balance, pull the knob and turn it clockwise or counterclockwise until sound from the left and right speakers is about equal from your listening position.

2. Bass Control (BASS)
Slide the lever to the left and right for the desired bass tone.

3. Treble Control (TRE)
Slide the lever to the left and right for the desired treble tone.



4. Loudness Control (LOUD)
Light comes on when the loudness is switched on.
This control is devised to compensate human hearing deficiency in high and low frequency regions when volume is low. Switch on the loudness when listening at low volume; and when listening at high volume, switch off the loudness (light goes out).

5. Fader Control (FAD)
Turn the control fully clockwise if two speakers are installed with this unit. If the fader control is turned fully counterclockwise no sound can be heard.
If additional two speakers are installed through a separate power amplifier (via the "PRE-AMP OUTPUT CONNECTOR"), adjust the fader control for sound balance between speakers.

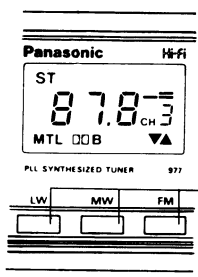
ILLUMINATION:
The control indications (green or orange) will illuminate depending upon the mode of operation. Green illuminations are for cassette deck operation, and orange illuminations are for radio operation.

3. Listening to the Radio

- Radio operation controls are indicated by orange illuminations.

a. Band Selection

Frequency Ranges:
LW : 153 kHz ~ 281 kHz
MW : 531 kHz ~ 1602 kHz
FM : 87.5 MHz ~ 108 MHz

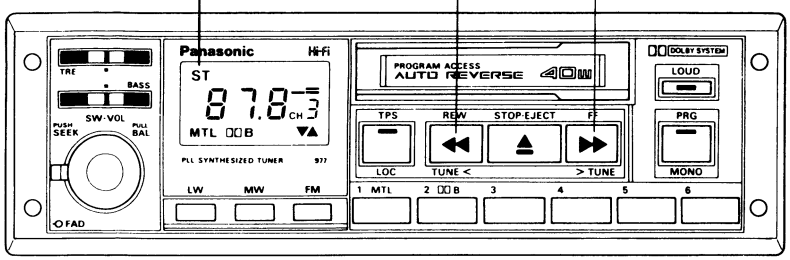


Band Selector (LW-MW-FM)(BAND)
Select the desired band (LW-MW-FM).
The radio frequency appears on the display panel.

b. Manual Tuning

FM Stereo "ST" Indicator Illuminates when the FM radio is being broadcast in "FM stereo".

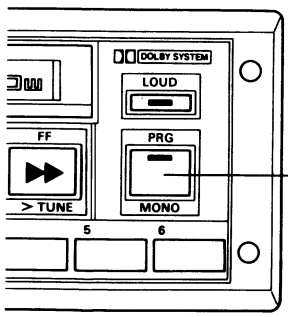
Up/Down Manual Tuning Pushbuttons (TUNE)
Tune in to the desired radio station frequency.
NOTE:
When you hold the button for more than half a second, the tuning frequency will count up or down rapidly. The tuning will stop instantly as soon as you let go.



FF
> TUNE
← Push to count up.

REW
TUNE <
← Push to count down.

NOTE:
Each time you push the manual "TUNE <" down or "> TUNE" up pushbutton, the frequency display will count up or down according to the radio band, as described below:
LW : 1 kHz each push (For ex., 153 → 154 → 155 → 156 → 157 → 158 → → → → 281)
MW : 9 kHz each push (For ex., 531 → 540 → 549 → 558 → 567 → 576 → → → → 1602)
FM : 25 kHz each push (For ex., 87.5 → 87.5⁻ → 87.5⁼ → 87.5⁻⁼ → 87.6 → 87.6⁻ → 87.6⁼ → 87.6⁻⁼ → → → → 108.0)
(The "⁻", "⁼" and "⁻⁼" indicate 25, 50 and 75 kHz frequency, respectively.)

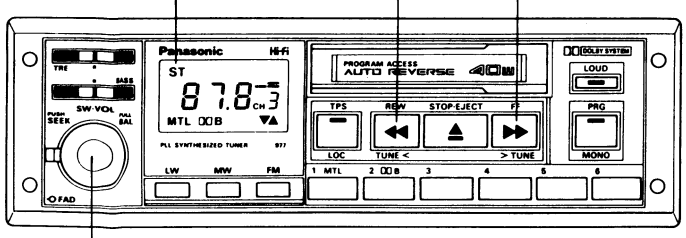


Mono Button (MONO)
Light comes on when the button is switched to "mono" mode. Switch the button on in weak FM signal areas to obtain clear FM reception (monaural). Push the button again (off position) for normal FM stereo reception, and the light goes out.

c. Seek Tuning

FM Stereo "ST" Indicator

Local/Distant Sensitivity Button (LOC)
Light comes on when the button is switched to "local" mode.
While seek tuning, if you feel there are too many stations (even weak ones) being received, switch the button on to receive nearby local stations only. Push the button again (off position) for distant radio stations, and the light goes out.

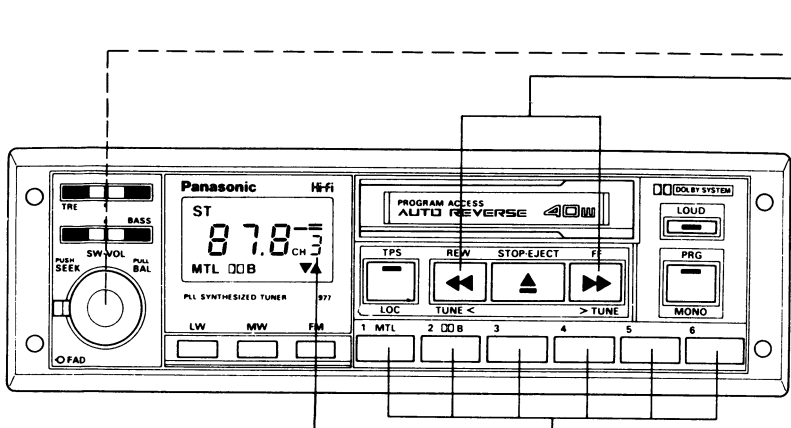


Seek Tuning Pushbutton (PUSH SEEK)
Each time you push the button, seek tuning is automatically done and will stop on the broadcasting radio station. If the button is pushed again, the next radio station will come out automatically. The seek tuning will count up in sequence only.

d. Preset Station Selectors

Six stations each for the LW, MW and FM bands can be preset in the electronic memory circuit on these six buttons ("1" – "6"), respectively. Each button is indicated on the display panel as follows:

"1" button as " CH1 ", "2" button as " CH2 ", "3" button as " CH3 ", "4" button as " CH4 ", "5" button as " CH5 " and "6" button as " CH6 ".



Manual/Seek Tuning Pushbuttons
Find the station you want by seek tuning or manual tuning.

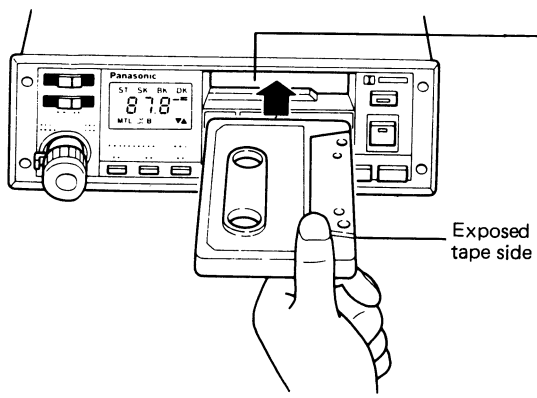
Indicates the selected preset station on the "3" button.

Preset Station Selectors ("1" – "6")
Hold one of the preset station selectors in for several seconds. (While holding the preset station selector, the radio cannnot be heard, "muting" circuit operates. This will activate the memory circuit to preset the desired station.) Release the preset station selector after you hear the radio again. The frequency display will also blink once when memory is activated. The preset station is indicated on the display panel.
NOTES:
1. Memory will not activate when the preset station selector is "hurriedly" released.
2. If any of these preset station selectors is accidentally pushed and held for several seconds (about more than 2 sec.), the previously "preset" station will be erased; and instead a different station will be entered into that memory circuit.

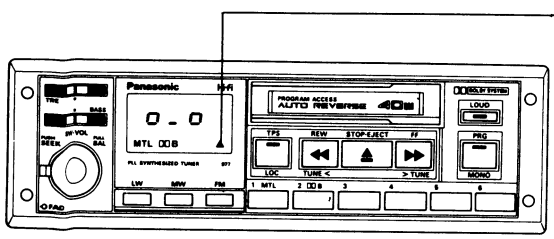
You can choose any one of the preset station selectors to preset the station. Thus, the six selectors can be used to set a total of a total of 18 stations (six for LW, six for MW and six for FM).

4. Listening to the Cassette Tape

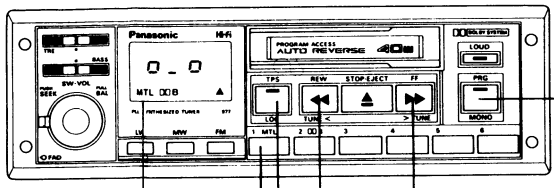
- Cassette operation controls are indicated by green illuminations.



Cassette Slot
Insert cassette with exposed tape side facing to the right. Push inward until the mechanism captures the cassette. Playback starts automatically when the cassette tape is inserted. Radio will not work while a tape is playing.



Tape Direction Indicator
The tape direction indicator (0-0▲ or 0-0▼) appears on the display panel during tape playback.
0-0▲ : Indicates the top side of the cassette is being played.
0-0▼ : Indicates the bottom side of the cassette is being played.



Tape Program Selector (PRG)
Push this button if you want ot change the direction of tape play as indicated by the tape direction indicator. If the button is not pushed, tape direction will change automatically at the end of the tape (Auto Reverse System).

Rewind/Fast Forward Buttons (REW/FF)
Make sure the TPS button is not switched on. Otherwise, the TPS circuit will operate.

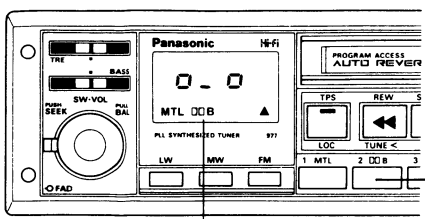
- Push the FF button for fast forward. When the tape reaches its end, Auto Reverse will operate and the opposite side of the tape plays back.
- Push the REW button for rewind. When the tape is fully rewound, tape plays back again the same side of the tape.
- To stop REW or FF operation, push the STOP/EJECT button. Then the tape play will resume from that position.

NOTES:
1. The REW or FF button should be pushed after the tape has started playback.
2. If the TPS button is switched on during REW or FF operation, the tape will stop and start playing the beginning of the nearest music program. See explanation on "TPS Button".
3. The tape direction indicator (0_0 or 0¯0) will blink during REW or FF operation.

Metal Tape Selector (MTL)
Push and the metal indicator comes on, for playing metal or CrO_2 tape.
Push again (metal indicator goes off) for playback of normal tape.
NOTE:
Wrong setting will cause high frequency imbalance.

Metal Indicator (MTL)
Light comes on when the metal tape selector is switched on.

TPS Button (TPS)
The tape program sensor (TPS) button, if switched on, will search up to nine programs in a prerecorded music tape.
Light comes on when the TPS button is switched on.
For further details on the TPS button, refer to **Box 1** (next page).



Dolby "B" Noise Reduction Button (DOLBY B)
Push the button on for playback of tape recorded by the Dolby Noise Reduction System "B". The Dolby NR indicator "DOLBY B" will light up.
Push button again (Dolby NR indicator goes off) for playback of tape not recorded by the Dolby Noise Reduction System "B". Cassette tapes not recorded with Dolby NR do not benefit from use of Dolby NR during playback.
Using the Dolby NR System on non-Dolby-encoded tape causes high frequency imbalance.
NOTE:
The Dolby NR circuit will not operate during radio reception.

Dolby "B" NR Indicator (DOLBY B)
Light comes on when the Dolby "B" NR button is switched on.

- Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

Box 1: TPS Button (Tape Program Sensor)
Push this button according to the numbers of the program (music) you want to select. The TPS will find the starting point of up to nine music programs in a prerecorded music tape. The quiet space between programs (must have at least a 4 sec. gap) can be sensed by the tape program sensor (TPS) circuit. If TPS is not required, push the TPS button again and the light goes off.
NOTE:
Most commercially available music cassette tapes are suitable for TPS system.

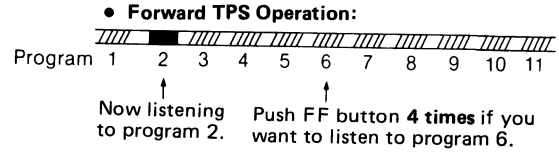
NOTES:
1. If the TPS button is switched off at the middle of the TPS operation, the fast forward or rewind operation will instead operate. See explanation on "Rewind/ Fast Forward Buttons".
2. TPS system will only operate after a lapse of about 1.5 seconds from the start of playback.

Tapes not suitable for TPS operation:
The TPS circuitry may not function properly for tapes described below, causing tapes to stop midway through a program or to overrun the space between programs.
1. Tapes which contain intermittent sound program, such as conversations, lectures, news, pianissimo-featured classical music, or music that includes many silent or mute passages.
2. Tapes which have a very short time interval between recorded programs.
3. Tapes which have a high level of noise or hum between programs.

How to operate the TPS:
- Push the TPS button and the light comes on.

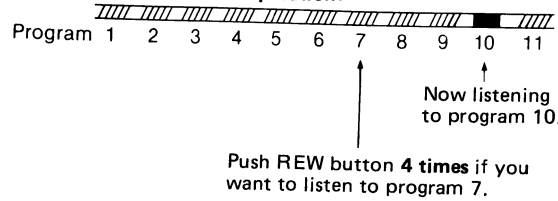
1. Forward TPS:
Pushing the FF button once will play the beginning of the next music. Pushing twice will go forward to the beginning of the second music and so forth. Up to 9 programs can be selected.

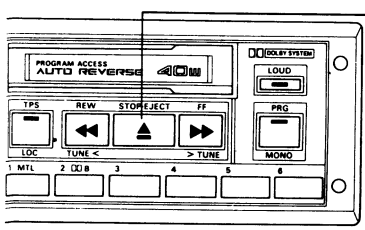
- **Forward TPS Operation:**



2. Rewind TPS:
Pushing the REW button once will replay the beginning of the music just listened to. Pushing twice will go back to the beginning of the previous music and so forth. Up to 9 programs can be selected.

- **Rewind TPS Operation:**

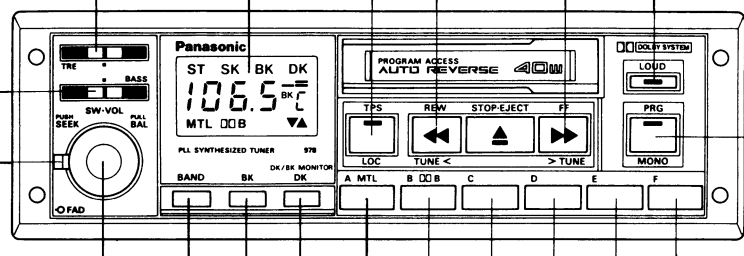




Stop/Eject Button (STOP/EJECT)
To stop playing, push this button. The cassette will pop out for removal, and the radio will be heard again.
NOTES:
1. If power is switched off before the STOP/EJECT button is pushed, the cassette will not eject. Switch on the power again and push the STOP/EJECT button to eject the cassette.
2. The cassette should always be removed from the cassette slot when not in use.

LOCATIONS/STELLE
(CQ-978EG)

• Main and Radio control / Haupt—und Radiokontrolltastatur



Display Panel
Anzeige

Local/Distant Sensitivity Button
Wahlschalter für Nah-/Fernempfang

Treble Control
Höhenregler

Bass Control
Tieftonregler

Fader Control
Überblendregler

Power Switch/Volume Control/
Balance Control/
Seek Tuning Pushbutton
Ein/Aus-Schalter/Lautstärkeregler/
Balanceregler/
Sendersuchlauftaste

Up/Down Manual Tuning Pushbuttons
Manuelle Höhen-/Tiefenabstimmregler

Loudness Control
Gehörrichtige Frequenzgangkorrektur

Mono Button
Mono-Wahlschalter

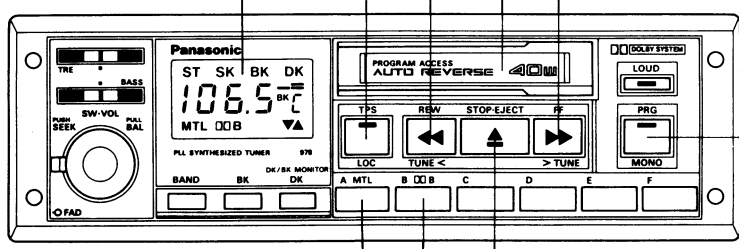
Preset Station Selectors and Designated "VF" Area Buttons
Festsendertasten und "VF"-Bereichstasten
Sélecteurs de Prereglage de stations et Boutons de zone "VF" désignee

DK Button
DK-Taste

BK Button
BK-Taste

Band Selector (LW-MW-FM)
Empfangsbereichwähler (LW-MW-UKW)

• Cassette Controls / Kontrolltastatur des Cassettengeräts



Rewind Button
Rücklauftaste

TPS Button
TPS-Taste

Display Panel
Anzeige

Cassette Slot
Cassettenschacht

Fast Forward Button
Schnellvorlauftaste

Tape Program Selector
Bandprogrammwähler

Metal Tape Selector
Reineisenband-Wahltaste

Dolby "B" Noise Reduction Button
Dolby "B" Rauschverminderungstaste

Stop/Eject Button
Stopp/Auswurftaste

OPERATION OF CONTROLS
(CQ-978EG)

1. Before Use

Before use, make sure to push eject button.

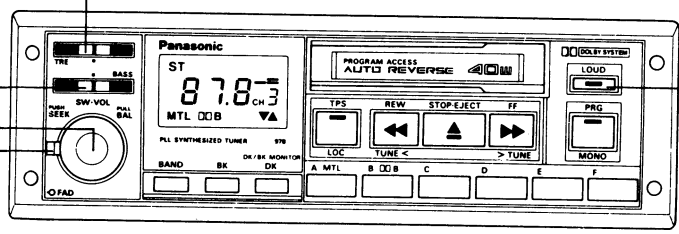
- In some cases, cassette holder will be locked by the shock during transportation.
  After wiring connections and installation are done, push eject button and deck will be ready for use.
- Do not insert cassette until all wiring connections are done.
  This model is equipped with an electronic eject system. Cassette will not eject when power is not on.

2. Main Control

1. Power Switch/Volume Control/Balance Control (SW-VOL/PULL BAL)
Power switch: Turn the knob clockwise to switch the power to the unit on. The display panel shows the radio frequency. To switch the power to the unit off, turn the knob fully counterclockwise until a click is heard.
Volume control: Adjust volume to the desired level with this knob. Turn the knob clockwise to increase volume; and counterclockwise to decrease volume. For your driving safety, keep the volume level low enough to be aware of road and traffic conditions.
Balance control: To adjust stereo balance, pull the knob and turn it clockwise or counterclockwise until sound from the left and right speakers is about equal from your listening position.

2. Bass Control (BASS)
Slide the lever to the left and right for the desired bass tone.

3. Treble Control (TRE)
Slide the lever to the left and right for the desired treble tone.



4. Loudness Control (LOUD)
Light comes on when the loudness is switched on.
This control is devised to compensate human hearing deficiency in high and low frequency regions when volume is low. Switch on the loudness when listening at low volume; and when listening at high volume, switch off the loudness (light goes out).

5. Fader Control (FAD)
Turn the control fully clockwise if two speakers are installed with this unit. If the fader control is turned fully counterclockwise no sound can be heard.
If additional two speakers are installed through a separate power amplifier (via the "PRE-AMP OUTPUT CONNECTOR"), adjust the fader control for sound balance between speakers.

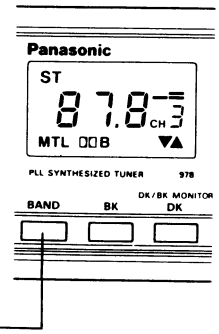
ILLUMINATION:
The control indications (green or orange) will illuminate depending upon the mode of operation. Green illuminations are for cassette deck operation, and orange illuminations are for radio operation.

3. Listening to the Radio

- Radio operation controls are indicated by orange illuminations.

a. Band Selection

Band Selector (LW-MW-FM)(BAND)
Each time you push the button, the band will be selected.
The radio frequency appears on the display panel.
NOTE:
For "VF" Reception (see Section III), push the BK button. However, if the band selector is pushed, the previously tuned radio band (LW, MW or FM) will be received again.

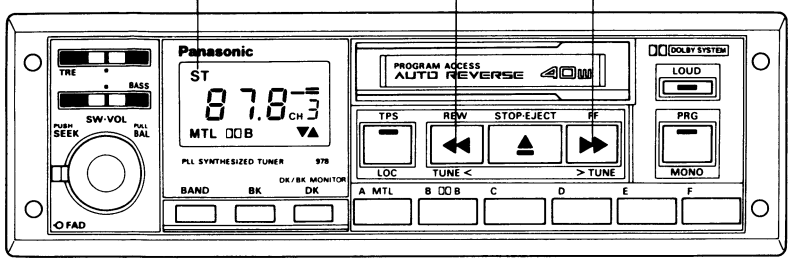


Frequency Ranges:
LW : 153 kHz ~ 281 kHz
MW : 531 kHz ~ 1602 kHz
FM : 87.5 MHz ~ 108 MHz

b. Manual Tuning

Up/Down Manual Tuning Pushbuttons (TUNE)
Tune in to the desired radio station frequency.
NOTE:
When you hold the button for more than half a second, the tuning frequency will count up or down rapidly. The tuning will stop instantly as soon as you let go.

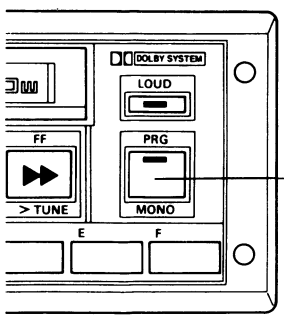
FM Stereo "ST" Indicator Illuminates when the FM radio is being broadcast in "FM stereo".



FF
> TUNE
← Push to count up.

REW
TUNE <
← Push to count down.

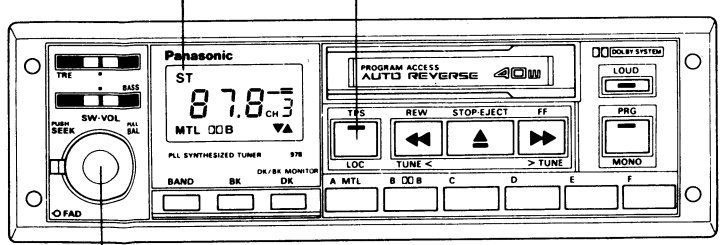
NOTE:
Each time you push the manual "TUNE<" down or ">TUNE" up pushbutton, the frequency display will count up or down according to the radio band, as described below:
LW : 1 kHz each push (For ex., 153 → 154 → 155 → 156 → 157 → 158 → → → → 281)
MW : 9 kHz each push (For ex., 531 → 540 → 549 → 558 → 567 → 576 → → → → 1602)
FM : 25 kHz each push (For ex., 87.5 → 87.5⁻ → 87.5⁼ → 87.5⁻⁼ → 87.6 → 87.6⁻ → 87.6⁼ → 87.6⁻⁼ → → → → 108.0)
(The "⁻", "⁼" and "⁻⁼" indicate 25, 50 and 75 kHz frequency, respectively.)



Mono Button (MONO)
Light comes on when the button is switched to "mono" mode. Switch the button on in weak FM signal areas to obtain clear FM reception (monaural). Push the button again (off position) for normal FM stereo reception, and the light goes out.

c. Seek Tuning

FM Stereo "ST" Indicator

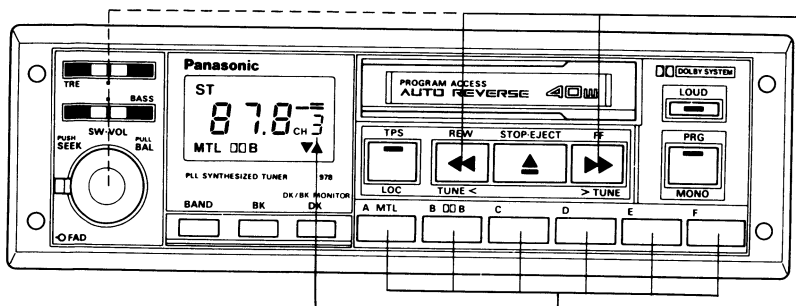


Local/Distant Sensitivity Button (LOC)
Light comes on when the button is switched to "local" mode.
While seek tuning, if you feel there are too many stations (even weak ones) being received, switch the button on to receive nearby local stations only. Push the button again (off position) for distant radio stations, and the light goes out.

Seek Tuning Pushbutton (PUSH SEEK)
Each time you push the button, seek tuning is automatically done and will stop on the broadcasting radio station. If the button is pushed again, the next radio station will come out automatically. The seek tuning will count up in sequence only.

d. Preset Station Selectors

Six stations each for the MW and FM bands and three stations for the LW band can be preset in the electronic memory circuit on these six buttons ("A" – "F"), respectively. Each button is indicated on the display panel as follows:
"A" button as " CH1 ", "B" button as " CH2 ", "C" button as " CH3 ", "D" button as " CH4 ", "E" button as " CH5 " and "F" button as " CH6 ".



Manual/Seek Tuning Pushbuttons
Find the station you want by seek tuning or manual tuning.

Indicates the selected preset station on the "C" button.

Preset Station Selectors ("A" – "F")
Hold one of the preset station selectors in for several seconds. (While holding the preset station selector, the radio cannot be heard, "muting" circuit operates. This will activate the memory circuit to preset the desired station.) Release the preset station selector after you hear the radio again. The frequency display will also blink once when memory is activated. The preset station is indicated on the display panel.
NOTES:
1. Memory will not activate when the preset station selector is "hurriedly" released.
2. If any of these preset station selectors is accidentally pushed and held for several seconds (about more than 2 sec.), the previously "preset" station will be erased; and instead a different station will be entered into that memory circuit.

You can choose any one of the preset station selectors to preset the station. Thus, the six selectors can be used to set a total of 15 stations (three for LW, six for MW and six for FM).

NOTE:
When the radio is at the SK/BK, DK reception, these six selectors are used for "BK" search tuning and for automatic presettings of up to six "VF" broadcast stations. Refer to Section III "SK/BK, DK Reception" for more details.

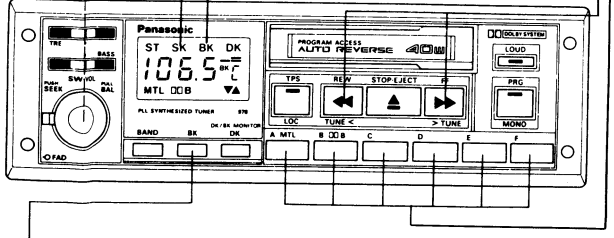
4. SK/BK, DK(VF) Reception (Traffic-Information Broadcast Station)

- Please refer to the "VF" area map (enclosed with this unit) for your designated traffic-information broadcast stations (Area "A" – "F").

a. SK/BK Reception

"SK" Indicator
Illuminates when the traffic-information broadcast station is tuned in.

"BK" Indicator
Illuminates when the BK button is switched on.



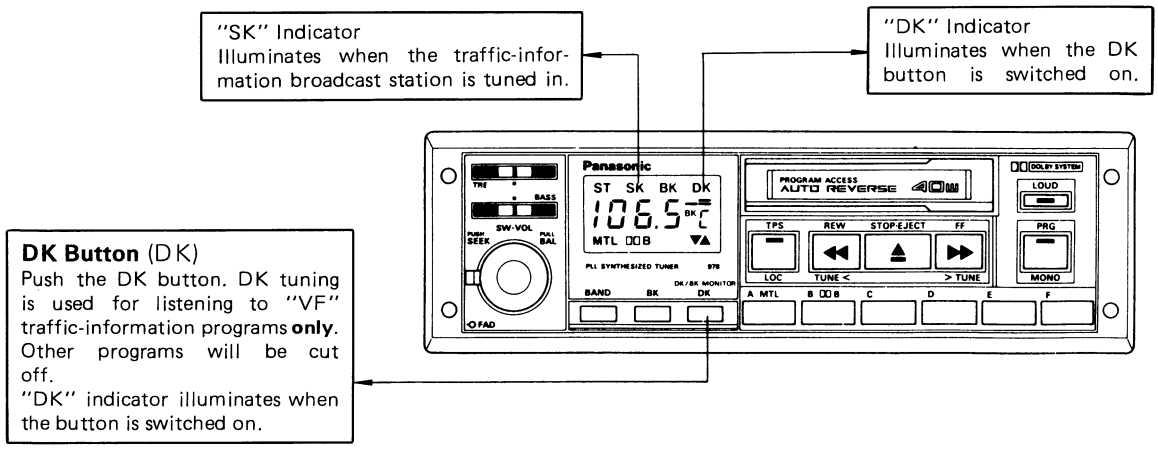
1. BK Button (BK)
Push the BK button for "VF" traffic-information broadcast reception.

2. "SK" search tuning, Manual/Seek Tuning, Pushbuttons
Tune in the traffic-information broadcast station by seek tuning (or manual tuning).
When the traffic-information broadcast station is searched, it is indicated on the display panel (" BK1 ", " BK2 ", " BK3 ", " BK4 ", " BK5 ", " BK6 ").

3. "BK" search tuning
Designated "VF" Area Buttons ("A" – "F")
- The corresponding area button, wherein the traffic-information broadcast station is received, will be indicated on the display panel. For example, if the traffic-information broadcast station is in the "C" area button, the " " will appear on the display. That station will automatically be memorized on the "C" button.
- If you want to hear your desired Designated Area traffic-information, select that designated area and push the corresponding designated area button. The "VF" traffic-information on that area will be automatically tuned in when that designated area button is pushed **again**. (When the "BK" broadcast station on that designated area button cannot be searched, the "SK" search tuning will automatically operate.)

NOTES:
1. Every time the traffic-information broadcast station is "on air" the normal FM radio program will temporarily be stopped. The "SK" indicator lights up.
2. If the traffic-information broadcasting station cannot be received due to weak signal when the desired designated "VF" area button is pushed, the "SK" indicator will not light up. In this case, push that same area button again or select another "VF" station by seek tuning.

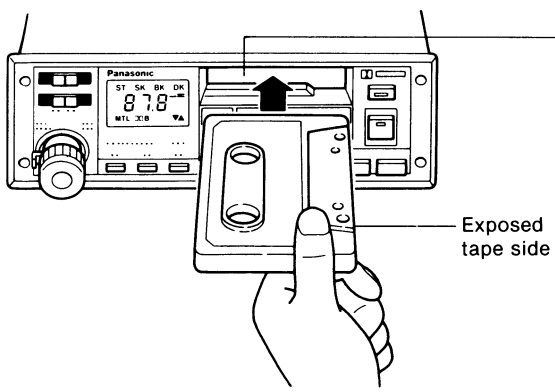
b. DK Reception



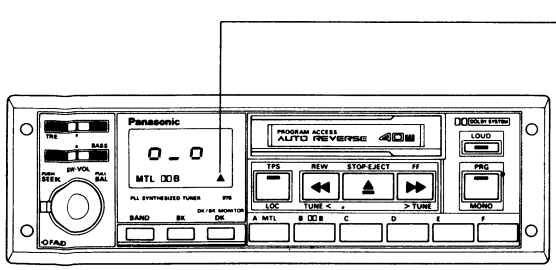
NOTES:
1. During tape play, the "VF" broadcast station can **still** be heard automatically as long as the BK button is switched on.
2. If you drive away from the tuned in "VF" broadcast station, the signal will become weak, and the "SK" indicator will go off and after about 15 seconds a "beep" warning sound can be heard (as long as the "DK" indicator is lighting up). Then the "BK" search tuning will automatically operate. If a new "VF" broadcast station is searched, a "beep" sound can be heard again. If the "BK" cannot be searched, the "SK" search tuning will automatically operate. (This explanation is also true during tape playback.)
3. If manual tuning is pushed, DK will **not** be available and the radio will switch to SK/BK mode unless the DK button is pushed again.

5. Listening to the Cassette Tape

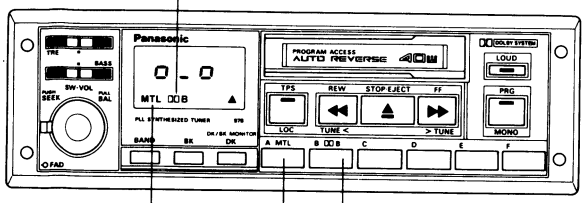
- Cassette operation controls are indicated by green illuminations. (During "VF" reception the illumination will change to orange.)



Cassette Slot
Insert cassette with exposed tape side facing to the right. Push inward until the mechanism captures the cassette. Playback starts automatically when the cassette tape is inserted. Radio (except "VF" reception) will not work while a tape is playing.



Tape Direction Indicator
The tape direction indicator (0-0▲ or 0-0▼) appears on the display panel during tape playback.
0-0▲ : Indicates the top side of the cassette is being played.
0-0▼ : Indicates the bottom side of the cassette is being played.
NOTE:
However, when the BK button is switched on, before or after the tape is inserted, the "VF" frequency appears on the display panel.



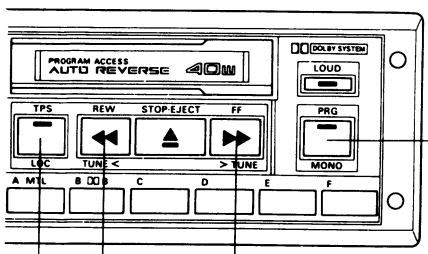
Dolby "B" NR Indicator (DOLBY B)
Light comes on when the Dolby "B" NR button is switched on.

Dolby "B" Noise Reduction Button (DOLBY B)
Push the button on for playback of tape recorded by the Dolby Noise Reduction System "B". The Dolby NR indicator " DOLBY B" will light up.
Push button again (Dolby NR indicator goes off) for playback of tape not recorded by the Dolby Noise Reduction System "B".
Cassette tapes not recorded with Dolby NR do not benefit from use of Dolby NR during playback.
Using the Dolby NR System on non-Dolby-encoded tape causes high frequency imbalance.
NOTE:
The Dolby NR circuit will not operate during radio reception.

Metal Tape Selector (MTL)
Push and the metal indicator comes on, for playing metal or CrO_2 tape.
Push again (metal indicator goes off) for playback of normal tape.
NOTE:
Wrong setting will cause high frequency imbalance.

- Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

Metal Indicator (MTL)
Light comes on when the metal tape selector is switched on.



Tape Program Selector (PRG)
Push this button if you want to change the direction of tape play as indicated by the tape direction indicator. If the button is not pushed, tape direction will change automatically at the end of the tape (Auto Reverse System).

Rewind/Fast Forward Buttons (REW/FF)
Make sure the TPS button is not switched on. Otherwise, the TPS circuit will operate.
- Push the FF button for fast forward. When the tape reaches its end, Auto Reverse will operate and the opposite side of the tape plays back.
- Push the REW button for rewind. When the tape is fully rewound, tape plays back again the same side of the tape.
- To stop REW or FF operation, push the STOP/EJECT button. Then the tape play will resume from that position.

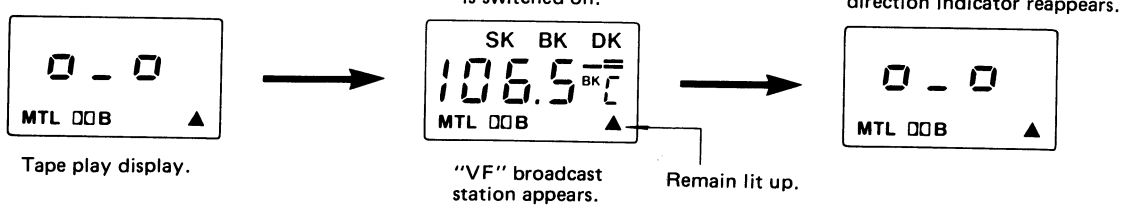
NOTES:
1. The REW or FF button should be pushed after the tape has started playback.
2. If the TPS button is switched on during REW or FF operation, the tape will stop and start playing the beginning of the nearest music program. See explanation on "TPS Button".
3. The tape direction indicator (0_0 or 0¯0) will blink during REW or FF operation.

TPS Button (TPS)
The tape program sensor (TPS) button, if switched on, will search up to nine programs in a prerecorded music tape.
Light comes on when the TPS button is switched on.
For further details on the TPS button, refer to **Box 1**.

DK Button (DK/BK MONITOR)
During tape playback, if you want to listen to the radio momentarily, simply push the DK button. Tape playback will stop (pause mode) and the radio can be heard. To resume tape playback, push the DK button again.
NOTE:
This explanation is only possible if the BK button is switched on.

a. "VF" (Traffic- Information Broadcast) Display mode during tape operation.

- When the BK button is switched on, the "VF" broadcast station will appear on the display panel.



b. Tuning in the "VF" Traffic-Information during tape operation

1. Push the BK button. The BX indicator lights up.
2. Tune in to the "VF" broadcast station;
   - Using seek tuning ("SK" search tuning).
     Push seek tuning pushbutton. The "VF" broadcast station will appear on the display panel.
   - Using manual tuning (TUNE< or >TUNE) or "BK" search tuning ("VF" area buttons "A" – "F").
     Push the DK button to off. The DK indicator should **not** be lighting up. Then push the up/down tuning pushbutton (TUNE< or >TUNE) for manual tuning. Or, push any designated area buttons ("A" – "F") by following the instructions on page 5 under the "BK" search tuning.

NOTE:
When the "VF" traffic-information broadcase (DK) is "on air", tape play will stop (tape at "pause" mode). (Tape can be ejected, if necessary, during "VF" traffic-information reception.) Tape play will resume after the traffic-information broadcast is terminated.

Box 1: TPS button (Tape Program Sensor)
Push this button according to the numbers of the program (music) you want to select. The TPS will find the starting point of up to nine music programs in a prerecorded music tape. The quiet space between programs (must have at least a 4 sec. gap) can be sensed by the tape program sensor (TPS) circuit. If TPS is not required, push the TPS button again and the light goes off.
NOTE:
Most commercially available music cassette tapes are suitable for TPS system.

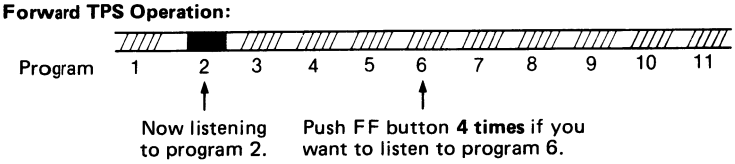
NOTES:
1. If the TPS button is switched off at the middle of the TPS operation, the fast forward or rewind operation will instead operate. See explanation on "Rewind/Fast Forward Buttons".
2. TPS system will only operate after a lapse of about 1.5 seconds from the start of playback.

Tape not suitable for TPS operation:
The TPS circuitry may not function properly for tapes described below, causing tapes to stop midway through a program or to overrun the space between programs.
1. Tapes which contain intermittent sound program, such as conversations, lectures, news, pianissimo-featured classical music, or music that includes many silent or mute passages.
2. Tapes which have a very short time interval between recorded programs.
3. Tapes which have a high level of noise or hum between programs.

How to operate the TPS:
- Push the TPS button and the light comes on.

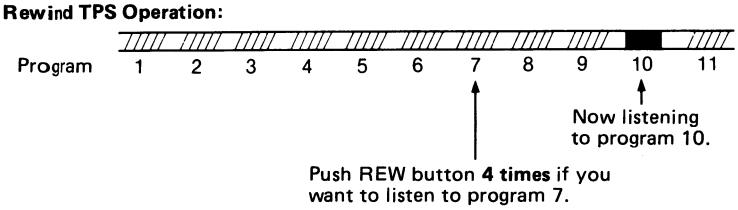
1. Forward TPS:
Pushing the FF button once will play the beginning of the next music. Pushing twice will go forward to the beginning of the second music and so forth. Up to 9 programs can be selected.

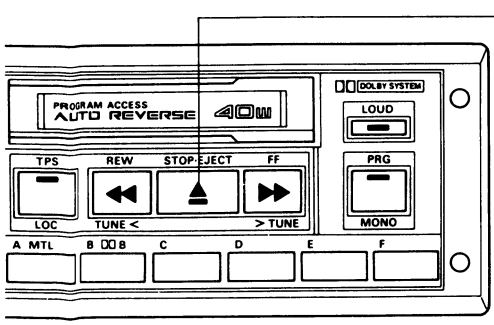
- **Forward TPS Operation:**



2. Rewind TPS:
Pushing the REW button once will replay the beginning of the music just listened to. Pushing twice will go back to the beginning of the previous music and so forth. Up to 9 programs can be selected.

- **Rewind TPS Operation:**





Stop/Eject Button (STOP/EJECT)
To Stop playing, push this button. The cassette will pop out for removal, and the radio will be heard again.
NOTES:
1. If power is switched off before the STOP/EJECT button is pushed, the cassette will not eject. Switch on the power again and push the STOP/EJECT button to eject the cassette.
2. The cassette should always be removed from the cassette slot when not in use.

BEDIENUNGSELEMENTE
(CQ-978EG)

1. Vor dem Betrieb

Vor der Inbetriebnahme, unbedingt die Auswurftaste drücken.

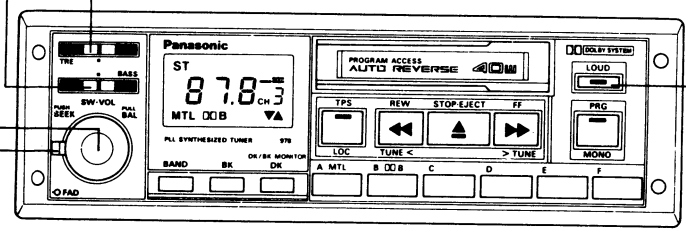
- Manchmal könnte der Cassettenhalter aufgrund der während des Transportes auftretenden Stöße verriegelt werden.
  Nach Ausführung aller Anschlüsse ist die Auswurftaste zu drücken, um das Cassettendeck in den betriebsbereiten Zustand zu versetzen.
- Die Cassette erst einsetzen, nachdem alle Anschlüsse ausgeführt wurden. Dieses Modell ist mit einem elektronischen Auswurfsystem ausgerüstet, d. h. die Cassette kann nur bei eingeschalteter Stromversorgung ausgeworfen werden.

2. Hauptschalter

1. Ein/Aus-Schalter/Lautstärkeregler/Balanceregler (SW-VOL/PULL BAL)
Ein/Aus-Schalter: Drehen Sie den Knopf im Uhrzeigersinn, um das Gerät einzuschalten. Auf dem Display erscheint die Radiofrequenz. Zum Ausschalten des Geräts den Knopf ganz gegen den Uhrzeigersinn drehen, bis ein Klicken zu hören ist.
Lautstärkeregler: Die gewünschte Lautstärke mit diesem Knopf einstellen. Den Knopf im Uhrzeigersinn drehen, um die Lautstärke zu erhöhen, und gegen den Uhrzeigersinn, um sie zu senken. Im Hinblick auf Ihre und die allgemeine Verkehrssicherheit den Lautstärkepegel so niedrig halten, daß Sie die Verkehrssituation wahrnehmen können.
Balanceregler: Um den Stereoeffekt einzustellen, am Knopf ziehen und im oder gegen den Uhrzeigersinn drehen, bis der Klang aus beiden Lautsprechern gleichmäßig, auf Ihre Sitzposition abgestimmt, ertönt.

2. Tieftonregler (BASS)
Für die gewünschte Baßabstimmung den Hebel nach rechts oder links schieben.

3. Hohenregler (TRE)
Für die gewünschte Höhenabstimmung den Hebel nach rechts oder links schieben.



4. Gehorrichtige Frequenzgangkorrektur (LOUD)
Bei eingeschalteter gehörrichtiger Frequenzgangkorrektur leuchtet ein Lämpchen auf.
Diese Kontrolleinrichtung erfüllt den Zweck menschliche Hörmängel in hohen und niedrigen Frequenzbereichen bei niedriger Lautstärke zu kompensieren. Schalten Sie die gehörrichtige Frequenzgangkorrektur zu, wenn Sie bei niedriger Lautstärke hören; und ab, bei hoher Lautstärke (Lämpchen erlöscht).

5. Überblendregler (FAD)
Drehen Sie diesen Regler im Uhrzeigersinn voll auf wenn zeri Lautsprecher angeschlossen sind. Lst der Überblendregler entgegen dem Uhrzeigersinn voll aufgedreht, bleiben die Lautsprecher stumm. Sind zusätzlich zwei weitere Lautsprecher über einen separaten Leistungsverstärker (mittels dem "VORVERSTÄRKER AUSGANGSANSCHLUSS"), angeschlossen, stimmen Sie mit dem Überblendregler den Klang zwischen den Lautsprechern ab.

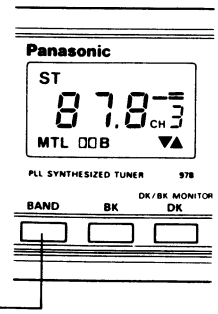
BELEUCHTUNG:
Die Kontrollanzeigen leuchten je nach Einstellungsmodus grün oder orange auf. Grün bei Cassettendeckbetrieb und orange Beleuchtung bei Radiobetrieb.

3. Rundfunkempfang

- Rediobetrib wird durch orange Beleuchtung angezeigt.

a. Wahl des Empfangsbereichs

Empfangsbereichwähler (LW-MW-UKW)(BAND)
Bei jeweiligem Knopfdruck wird ein Empfangsbereich gewählt.
Die Bandfrequenz wird auf dem Display angezeigt.
HINWEIS:
Für "VF"-Verkehrsfunkempfang (vgl.Teil III), drücken Sie die BK-Taste. Bei eingeschaltetem Empfangsbereichwähler wird auf den vorher gehörten Sender (LW, MW oder UKW) zurückgeschaltet.

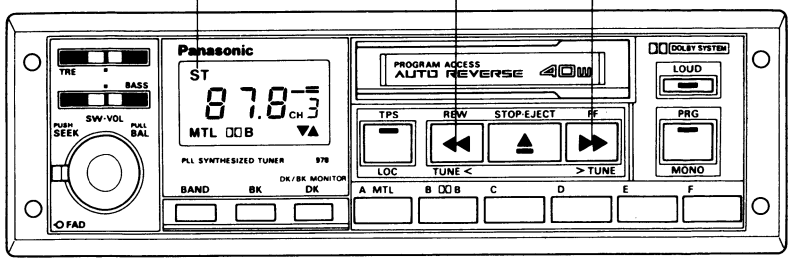


Frequenzbereiche:
LW : 153 kHz ~ 281 kHz
MW : 531 kHz ~ 1602 kHz
UKW : 87,5 MHz ~ 108 MHz

b. Manuelle Abstimmung

UKW-Stereo "ST"-Anzeige leuchtet auf, wenn das Radio auf UKW gerade in "UKW-Stereo" sendet.

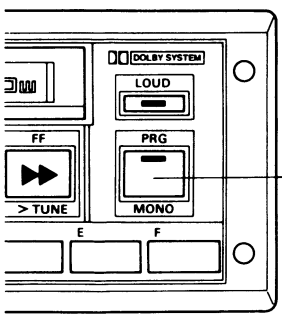
Manuelle Höhen-/Tiefenabstimmregler (TUNE)
Hiermit stimmen Sie die gewünschte Senderfrequenz ab.
HINWEIS:
Halten Sie den Schalter länger als eine halbe Sekunde gedrückt, verändert sich die Senderfrequenz schnell nach oben oder unten. Dies stoppt, sobald Sie loslassen.



FF
> TUNE
← Drücken Sie hier für höhere Frequenzbereiche

REW
TUNE <
← Drücken Sie hier für niedrigere Frequenzbereiche

HINWEIS:
Jedesmal, wenn Sie die manuellen "TUNE<" tiefer oder ">TUNE" höher Druckknopfschalter betätigen, verändern Sie die Frequenz. Dies verdeutlicht untenstehendes Beispiel der sich verändernden Frequenzanzeige:
LW : 1 kHz per Druck (z.B.: 153 → 154 → 155 → 156 → 157 → 158 → → → → 281)
MW : 9 kHz per Druck (z.B.: 531 → 540 → 549 → 558 → 567 → 576 → → → → 1602)
UKW : 25 kHz per Druck (z.B.: 87.5 → 87.5⁻ → 87.5⁼ → 87.5⁻⁼ → 87.6 → 87.6⁻ → 87.6⁼ → 87.6⁻⁼ → → → → 108.0)
(Die Symbole "–", "=", "–=" stehen für 25, 50, und 75 kHz.)

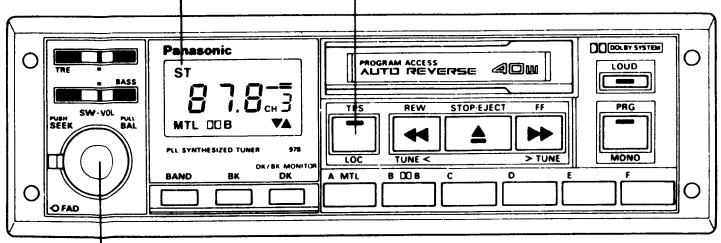


Mono-Wahlschalter (MONO)
Ein Lämpchen leuchtet auf, wenn die Taste auf "Mono"-Betrieb steht. In Gebieten mit schwacher UKW-Senderstärke schalten Sie die Taste zu, um einen klaren UKW-Empfang (monaural) zu erhalten. Für normalen UKW-Stereoempfang drücken Sie die Taste nochmals (Aus-Stellung); das Lämpchen erlöscht.

c. Automatischer Sendersuchlauf

UKW-Stereo "ST"-Anzeige

Wahlshalter für Nah-/Fernempfang (LOC)
Ist die Taste auf Nahempfang (LOC) geschaltet, leuchtet ein Lämpchen auf.
Treten bei der Sendersuche Störunggeräusche durch Überlappung mehrerer (auch schwacher) Sender auf, drücken Sie diese Taste. Sie empfangen dann nur noch örtlich nahe Sender. Drücken Sie die Taste nocheinmal (Aus-Stellung) um auch entfernte Sender zu empfangen. Das Lämpchen erlöscht.

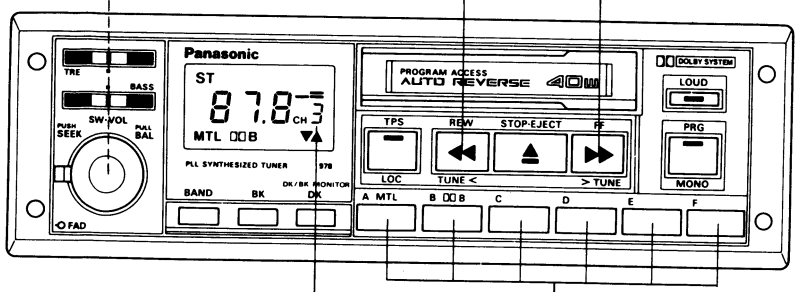


Sendersuchlauftaste (PUSH SEEK)
Bei jeder Betätigung dieser Taste setzt die automatische Sendersuche ein; der Suchlauf stoppt bei der ersten gerade sendenden Rundfunkstation. Ein weiteres Drücken auf die Suchlauftaste findet automatisch den nächsten Sender. Der automatische Sendersuchlauf funktioniert nur in Richtung töhere Frequenzbereiche.

d. Festsendertasten

Mit den sechs Tasten ("A" – "F") können-auf UKW und MW sechs Sender und auf LW drei Sender im elektronischen Speicher vorprogrammiert werden. Auf der Anzeige werden sie wie folgt ausgewiesen:

Taste "A" als " CH1 ", Taste "B" als " CH2 ", Taste "C" als " CH3 ", Taste "D" als " CH4 ", Taste "E" als " CH5 " und Taste "F" als " CH6 ".



Manuelle/Sender-suchlauftasten
Finden Sie den gewünschten Sender mit manueller oder automatischer Suchlaufeinstellung.

Zeigt den gewählten Fastsender an, der hier mit der Taste "C" abgerufen wurde.

Fastsendertasten ("A" – "F")
Eine dieser Festsendertasten für ein paar Sekunden gedrückt halten. (Bei gedrückter-Festsendertaste kann kein Radio gehört werden, die "Mutingschaltung" arbeitet. Dieses aktiviert den Speicherschaltkreis zur Auswahl des gewünschten Senders.) Nachdem Sie das Radio wieder hören, lassen Sie die Taste los. Die Frequenzanzeige blinkt auch einmal auf wenn der Speicher aktiviert ist. Der vorprogrammierte Sender wird auf dem Display angezeigt.
HINWEISE:
1. Der Speicher wird nicht aktiviert, wenn die Festsendertaste zu schnell losgelassen wird. Beachten Sie deshalb die Frequenzbereichsanzeige auf dem Display. Diese blinkt einmal auf, sobald der Speicher aktiviert ist.
2. Wird eine dieser Festsendertasten versehentlich gedrückt und für mehrere Sekunden gedrückt gehalten (ca. zwei Sekunden oder länger), wird der ehemals einprogrammierte Sender gelöscht und a seiner Stelle ein anderer Sender im Memory gespeichert.

Sie können jede der Festsendertasten zur Sendervorprogrammierung einsetzen. Dadurch können Sie insgesamt fünfzehn Sender speichern (Drei auf LW und sechs jeweils auf MW und UKW).
HINWEIS:
Wenn das Gerät auf SK/BK oder DK Empfang geschaltet ist, werden diese sechs. Wahltasten zum "BK"-Suchlauf und zur automatischen Vorwahl von bis zu sechs "VF"-Verkehrsfunksendern verwendet. Nähere Einzelheiten entnehmen Sie bitte dem Abschnitt III "SK/BK, DK-Empfang".

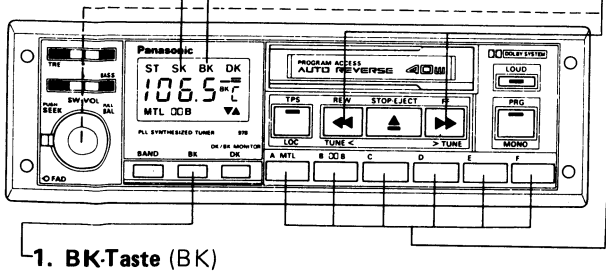
4. Empfang von Verkehrsfunkinformationen: SK/BK, DK (VF)

- **Für Verkehrsfunkstationen siehe "VF"-Empfangskarte (Bereich "A" – "F"), die mit diesem Gerät geliefert wird.**

a. SK/BK Emptang

"SK"-Anzeige
Die "SK"-Anzeige leuchtet auf, wenn auf eine Verkehrsfunkstation eingestellt ist.

"BK"-Anzeige
"BK"-Anzeige leuchtet auf, wenn die BK-Taste einges chaltet ist.



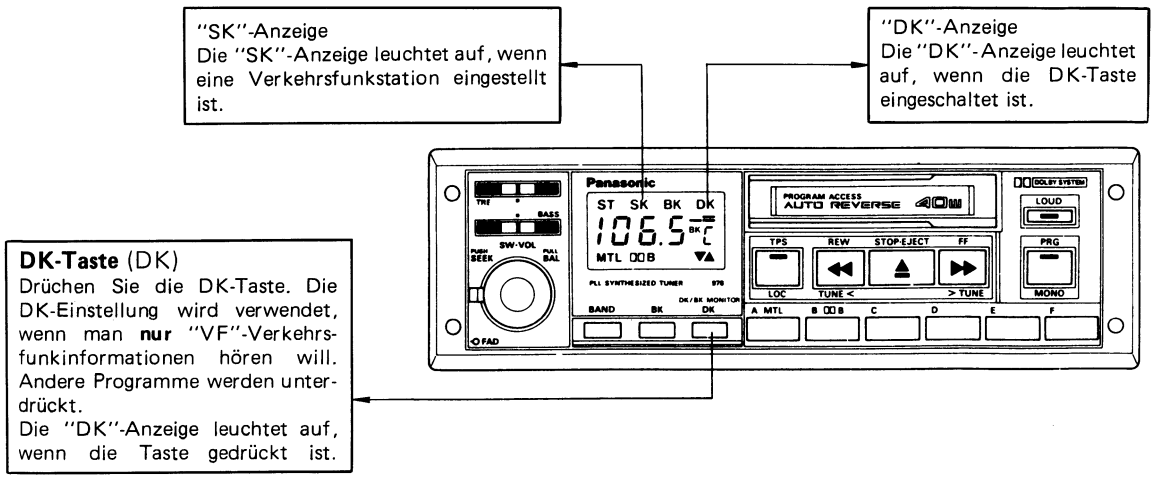
1. BK-Taste (BK)
Drücken Sie die BK-Taste für "VF" Verkehrsfunkempfang.

2. "SK"-Suchlauf
Manuelle/Sendersuchlauftasten
Auf die gewünschte Verkehrsfunkstation abstimmen (manuell, oder mit automatischem Sendersuchlauf). Wenn ein Verkehrsfunksender gefun den ist, wird dies auf dem Display angezeigt (" BK8 ", " BK8 ", " BKC ", " BKD ", " BKE ", " BKF ").

3. "BK"-Suchlauf
"VF"-Bereichstasten ("A" – "F")
- Die Bereichstaste, welche den Empfang einer Verkehrsfunkstation ermöglicht, wird auf dem Display angezeigt. Wenn z.B. eine Verkehrsfunkstation im Bereich der Taste "C" sendet, dann erscheint " BKC " auf der Anzeige. Diese station wird automatisch auf der "C"-Taste gespeichert.
- Wenn Sie den Verkehrsfunk eines bestimmten Gebietes hören wollen, drücken Sie einfach die entsprechende Bereichstaste. Der "VF"-Verkehrsfunk dieses Gebietes wird automatisch eingestellt wenn Sie die Bereichstaste **noch einmal** drücken. (Kann der "BK"-Sender mit dieser Bereichstaste nicht gefunden werden, arbeitet automatisch die "SK"-Senderwahl.)

HINWEISE:
1. Jedesmal wenn die Verkehrsfunkstation eine Verkehrsinformation sendet, wird das normal UKW-Programm zeitweilig unterbrochen und die "SK"-Anzeige leuchtet auf.
2. Falls bei schwach einfallender Verkehrsfunkstation die "VF"-Bereichstaste gedrückt wird, leuchtet die "SK"-Anzeige nicht auf. In diesem Fall diegleiche Bereichstaste noch einmal drücken bzw. mit automatischem Sendersuchlauf eine andere "VF"-Station einstellen.

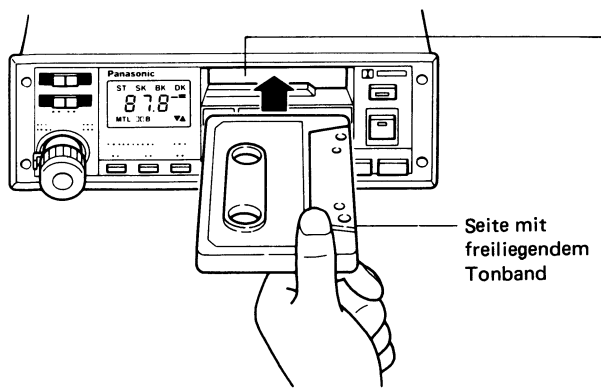
b. DK-Empfang



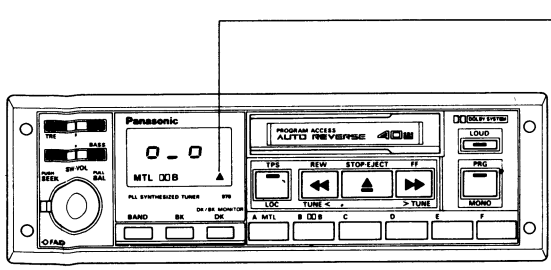
HINWEISE:
1. **Auch** bei Cassettenbetrieb kann der "VF"-Verkehrsfunk **immer** automatisch gehört werden, solange die BK-Taste zugeschaltet ist.
2. Wenn Sie aus dem Bereich des eingestellten Verkehrsfunksenders herausfahren, wird das Signal schwächer und die "SK"-Anzeige erlischt. In diesem Fall ertönt nach fünfzehn Sekunden ein "Piep"-Warnton, solange die "DK"-Anzeige erleuchtet ist. Jetzt setzt automatisch der "BK"-Suchlauf ein. Ist ein neuer Verkehrsfunksender gefunden, hören Sie wieder einen "Piep" Ton. Wenn nicht mit "BK" gesucht werden kann, arbeitet automatisch der "SK"-Suchlauf. (Dies gilt auch bei Cassettenbetrieb.)
3. Ist manuelle Senderwahl eingestellt, steht die DK-Funktion **nicht** zur Verfügung und das Gerät schaltet auf SK/BK-Betrieb, ausser die DK Taste wird wieder gedrückt.

5. Tonband-Wiedergabe

- **Cassettendeckbetrieb wird durch grüne Beleuchtung angezeigt. (Während "VF" Empfang wechselt die Beleuchtung auf orange.)**

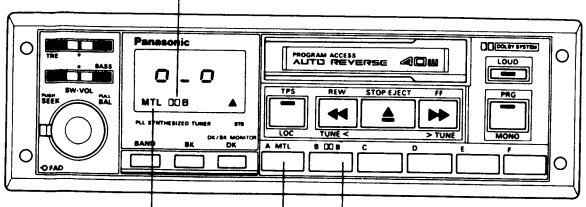


Cassettenschacht
Die Cassette mit der freiliegenden Tonbandfläche nach rechts schauend in den Cassettenschacht einschieben, bis die Cassette einrastet, worauf automatisch die Wiedergabe einsetzt. Rundfunkempfang (ausgenommen "VF"-Verkehrsfunkinformationen) ist während der Tonbandwiedergabe nicht möglich.



Bandlaufrichtungsanzeige
Bei der Bandwiedergabe erscheinen auf dem Display die Symbole (▁▔▲ oder ▔▁▼) für die Bandlaufrichtungsanzeige.
▁▔▲ : Zeigt an, daß die obere Seite der Cassette gespielt wird.
▔▁▼ : Zeigt an, daß die untere Seite der Cassette gespielt wird.

HINWEIS:
Wenn allerdings vor oder nach dem Einschieben der Cassette die BK-Taste gedrückt ist, erscheint auf dem Display die "VF"-Frequenzangabe.



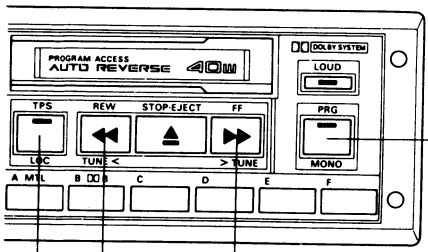
Dolby-NR-Anzeige "B" (DD B)
Ein Lämpchen leuchtet auf, wenn die Dolby-NR-Taste "B" gedrückt ist.

Dolby "B" Rauschverminderungstaste (DD B)
Schalten Sie die Taste ein, wenn Ihre Cassette mit dem Dolby "B" Rauschverminderungs-system bespielt wurde. Die Dolby-NR-Anzeige " DD B" leuchte auf. (NR = noise reduction)
Für das Abspielen von Cassetten, die nicht mit diesem Dolbysystem bespiel wurden, drücken Sie die Taste noch einmal (Dolby-NR-Anzeige "B" erlöscht). Die Wiedergabe von Cassetten, die nicht mit dem Dolby-NR-System bespielt wurden kann durch Dolby-NR nicht verbessert werden.
Einee Verwendung des Dolby-NR-Systems auf nicht mit diesem System bespielten Cassetten verursacht Unstimmigkeit im Hochfrequenzbereich.
HINWEIS:
Der Dolby-NR-Schaltkreis arbeitet nicht bei Radioempfang.

Reineisenband-Wahltaste (MTL)
Drücken Sie diese Taste für das Abspielen von Reineisen und CrO_2-Bändern und ein Lämpchen leuchtet auf.
Für das Abspielen von normalen Bändern drücken Sie die Taste noch einmal und das Lämpchen erlöscht.
HINWEIS:
Falsche Einstellung verursacht Unstimmigkeit im Hochfrequenz bereich.

Reineisenband-Anzeige (MTL)
Ein Lämpchen leuchtet auf, wenn der Band-Programmwähler eingeschaltet ist.

- Geräuschunterdrückungssystem unter Lizenz von Dolby Laboratories Licensing Corporation hergestellt.
- Das Wort "Dolby" und das Symbol des doppelten D sind die Warenzeichen von Dolby Laboratories Licensing Corporation.



Bandprogrammwähler (PRG)
Drücken Sie diese Taste, wenn Sie die Bandlaufrichtung, angezeigt durch die Bandlaufrichtungsanzeige, ändern wollen. Nicht gedrückte Taste ändert die Laufrichtung automatisch am Ende des Bandes (Auto Reverse System).

Rücklauf/Schnellvorlauftasten (REW/FF)
Überzeugen Sie sich, daß die TPS-Taste nicht gedrückt ist, sonst arbeitet der TPS-Schaltkreis.
- Drücken Sie die FF-Schnellvorlauftaste. Am Bandende schaltet sich die Auto Reverse-Funktion ein und die andere Bandseite wird abgespielt.
- Drücken Sie die REW-Rücklauftaste. Am Anfang angekommen wird die gleiche Bandseite wieder abgespielt.
- Wollen Sie die REW- oder FF-Funktion stoppen, drücken Sie die STOP/EJECT-Taste. Die Bandwiedergabe wird an dieser Position wieder einsetzen.

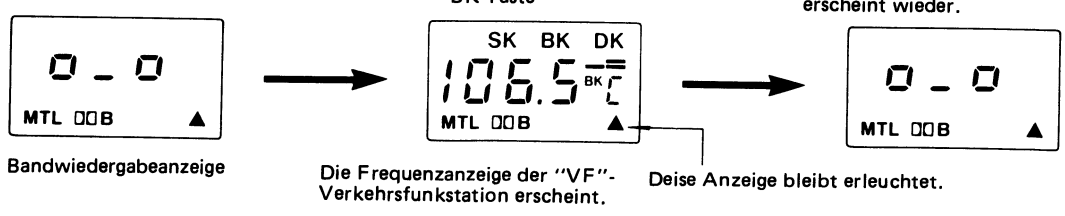
HINWEISE:
1. Die REW-oder FF-Taste drücken, nachdem die Wiedergabe begonnen hat.
2. Ist während REW- oder FF-Betrieb die TPS-Taste zugeschaltet, stoppt der Schnellauf am Anfang des nächsten Musikstückes und die Wiedergabe setzt ein. Vergleichen Sie dazu die Erläuterungen zur "TPS"-Taste.
3. Die Bandlaufrichtungsanzeige (0_0 oder 0¯0) blinkt während REW/FF Betrieb.

TPS-Taste (TPS)
Bei eingeschalteter TPS-Taste (Band-Programmwähler) kann man auf einem vorher bespielten Band bis zu neun Musikstücke auswählen. Ist die TPS-Taste eingeschaltet, leuchtet ein Lämpchen auf. Für weitere Erläuterungen zur TPS-Taste vergleichen Sie **Kasten 1.**

DK-Taste (DK/BK MONITOR)
Wollen Sie während Cassettenwiedergabe kurzzeitig Radio hören, drücken Sie einfach die DK-Taste. Die Band-wiedergabe wird unterbrochen (Pause-Betrieb) und das Radio kann gehört werden. Um zur Bandwiedergabe zurückzukehren, drücken Sie ein weiteres Mal die DK-Taste.
HINWEIS:
Diese Erläuterung gilt nur bei eingeschalteter BK-Taste.

a. "VF"-Verkehrsfunkanzeige Bei Cassettendeckbetrieb

- Bei zugeschalteter DK-Taste wird die "VF"-Verkehrsfunkstation auf dem Display angezeigt.



b. "VF"-Verkehrsfunkeinsellung Während Der Bandwiergabe

1. Die BK-Taste drücken und die BK-Anzeige leuchtet auf.
2. Den "VF"-Verkehrsfunksender einstellen;
   - Durch Benutzung des automatischen Suchlaufs ("SK"-Suchlauf)
     Drücken Sie die Suchlauftaste. Der "VF"-Verkehrsfunksender wird auf dem Display angezeigt.
   - Durch manuelle Einstellung (TUNE< oder >TUNE) oder auch mit "BK"-Suchlauf ("VF"-Bereichstasten "A" – "F").
     Schalten Sie die DK-Taste aus, so daß die DK-Anzeige **nicht** mehr aufleuchtet. Dann drücken Sie eine der beiden Abstimmtasten (TUNE< oder >TUNE) für die manuelle Einstellung. Sie können aber auch eine der Gebietsbezeichnungstasten ("A" – "F") drücken und sich desweiteren an die Anweisungen auf Seite 16 ("BK"-Suchlauf) halten.

HINWEIS:
Wird eine "VF"-Verkehrsinformation (DK) durchgegeben, stoppt die Bandwiedergabe ("Pause"-Betrieb). (Falls notwendig, kann die Cassette während dem "VF" Empfang herausgenommen werden.) Die Wiedergabe wird nach Beendigung der Verkehrsdurchsage wieder aufgenommen.

Kasten 1: TPS-Taste (Band-Programmwähler)
Drücken Sie diese Taste entsprechend der Reihenfolge der Musikstücke die Sie hören wollen. Das TPS-System findet aus einem vorher bespielten Band die Anfänge von bis zu neun Musikstücken heraus. Die Intervalle zwischen den einzelnen Musikstücken (Mindestintervall 4 Sekunden) können von dem Sensor des Band-Programmwählers gefunden werden. Drücken Sie die TPS-Taste noch einmal, wenn TPS nicht verlangt wird und das Lämpchen erlöscht.
HINWEIS:
Die meisten im Handel erhältlichen Cassetten eignen sich für Betrieb mit TPS-System.

HINWEIS:
1. Wird während TPS-Betrieb die TPS-Taste ausgeschaltet, schaltet anstatt TPS der Rücklauf/Schnellvorlaufbetrieb ein. Vergleichen Sie hierzu auch die Erläuterungen zur "Rücklauf/Schnellvorlauftaste".
2. Das TPS- System tritt erst mit 1,5 Sek. Verzögerung nach Wiedergabebeginn in Funktion.

Fur TPS-Betrieb ungeeignete Cassetten:
Für unten aufgeführte Bänder kann es vorkommen, daß das TPS-System nicht problemlos funktioniert. Dies kann zur Folge haben, daß die Cassette mitten im Stück gestoppt wird, oder daß die Intervalle nicht gefunden werden.
1. Bänder, die folgende Tonpassagen enthalten: Ansagen, Vorträge, Nachrichten, klassische Musikstücke mit Pianissimo-Passagen, oder auch Musikstücke, in denen ruhige Teile vorkommen.
2. Bänder mit sehr kurzen Intervallen zwischen den einzelnen Musikstücken.
3. Bänder mit einem hohen Geräusch oder Brummpegel zwischen den einzelnen Stücken.

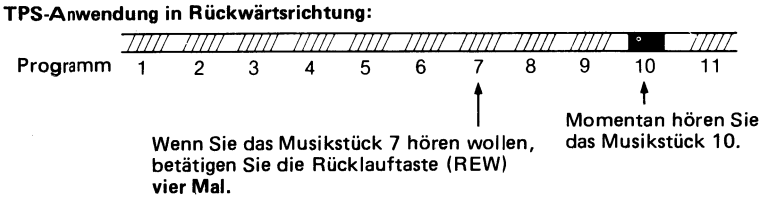
Und so verwenden Sie das TPS-System:
- Die Anzeige leuchtet auf, wenn die TPS Taste gedrückt wird.

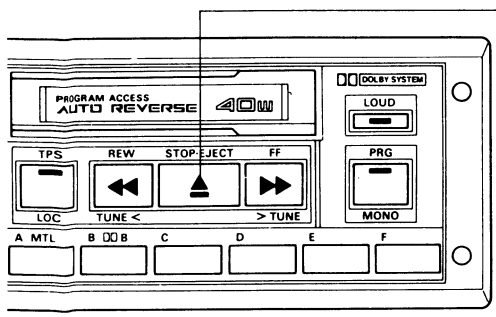
1. Vorwärts TPS Betrieb:
Wird die Schnellvorlauftaste (FF) einmal gedrückt, geginnt die Wiedergabe des nächsten Musikstückes. Zweimaliges Drücken bewirkt die Wiedergabe des zweiten Musikstückes und so fort. Bis zu 9 Programme können gewählt werden.

- **TPS-Anwendung in Vorwärtsrichtung:**

2. Rücklauf TPS Betrieb:
Wird die Rücklauftaste (REW) einmal gedrückt, wiederholt sich die Wiedergabe des zuletzt gehörten Musikstückes. Zweimaliges Drücken bewirkt die Wiedergabe des davor liegenden Musikstückes und so fort. Bis zu 9 Programme können gewählt werden.

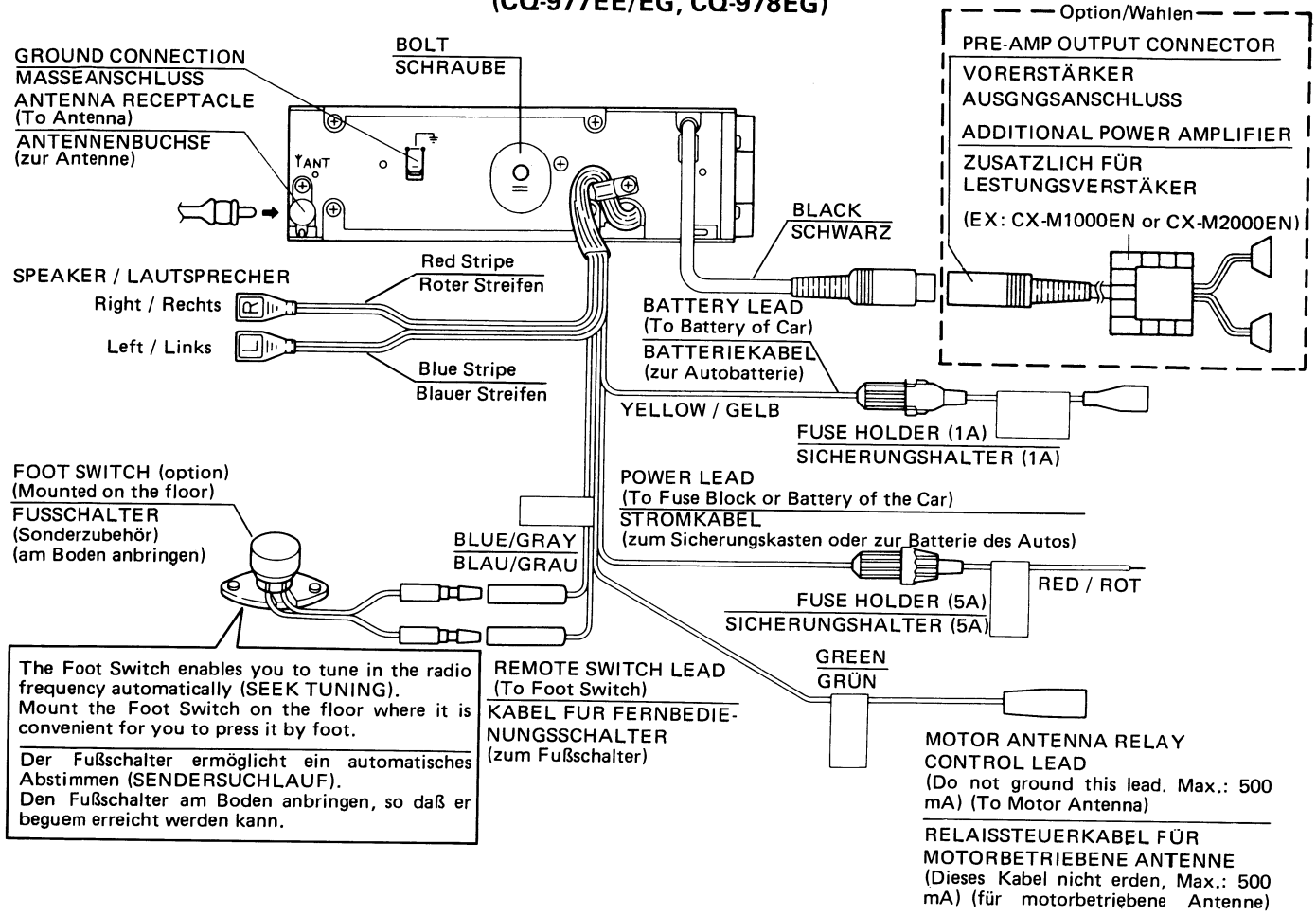
- **TPS-Anwendung in Rückwärtsrichtung:**





Stopp/Auswurftaste (STOP/EJECT)
Drücken Sie diese Taste, um die Wiedergabe zu stoppen. Die Cassette wird herausgefahren und der Radiobetrieb setzt wieder ein.
HINWEISE:
1. Schaltet man den Strom ab, bevor die STOPP/AUSWURFTASTE gedrückt wird, wird die Cassette nicht ausgeworfen. Schalten Sie den Stromschalter noch einmal ein und betätigen Sie die STOPP/AUSWURFTASTE, um die Cassette herauszuholen.
2. Bei Nichtbetrieb sollte die Cassette nicht im Cassettenschacht gelassen werden.

ELECTRICAL CONNECTION/ELEKTRISCHER ANSCHLUß
(CQ-977EE/EG, CQ-978EG)



INSTALLATION INSTRUCTION/ANWEISUNGEN FÜR EINBAU
(CQ-977EE/EG, CQ-978EG)

NOTES:

- Before installation check the radio operation with antenna and speakers.
- Disconnect the cable from the negative (–) battery terminal.

UNIT IN-DASH INSTALLATION

Installation Opening

In-dash installation of the unit can be possibly done if the car's dashboard has an opening for this unit as shown in Fig. 1. The car's dashboard should have a thickness of not more than 5.5 mm in order to make the installation of the unit be possible.

Installation Procedures

1. Insert the mounting case into the car's dashboard and bend the mounting springs correspondingly by means of a screwdriver, as shown in Fig. 2.
2. From the front, insert the unit into the mounting case and slide in until the lock springs engage on the right and left sides (distinct click audible). See Fig. 2.
3. Before definitely mounting the unit to the car's dashboard, see "To secure the Rear of the Unit" explained on the right side and check whether the rear of the unit is properly fixed to the fire wall of car. Refer to any

HINWEISE:

- Vor dem Einbau Radiofunktion mittels Antenne und Lautsprecher prüfen.
- Das kabel von der negativen (–) Batterieklemme abtrennen.

EINBAU IN DAS ARMATURENBRETT

Einbauöffnung

Das Gerät kann in das Armaturenbrett eingebaut werden, wenn das Armaturenbrett mit der in Abb. 1 gezeigten Einbauöffnung ausgestattet ist. Die Stärke des Armaturenbretts sollte nicht mehr als 5,5 mm betragen, damit die Einheit richtig eingebaut werden kann.

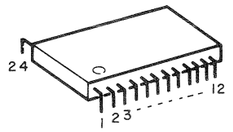
Einbauvorgang

1. Das Einbaugehäuse in das Armaturenbrett einführen und die Befestigungsfedern mittels Schraubenzieher biegen, wie es in Abb. 2 dargestellt ist.
2. Das Gerät von vorn in das Einbaugehäuse einführen und so weit nach hinten einschieben, bis die beiden, linksund rechtsseitigen Schließfedern mit einem deutlichen Klicken einrasten (Vgl.Abb. 2.).
3. Vor dem endgültigen Einbau des Geräts in das Armaturenbrett sind die rechts unter "Befestigung der Geräterückseite" aufgeführten Punkte zu beachten,

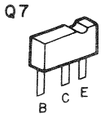
WIRING DIAGRAM MODEL CQ-977EE/EG, 978EG(RADIO BLOCK)

Q7		Q8	
B	3.3V	D	2.7V
C	8.0V	G	3.6V
E	2.7V	S	0V

IC4

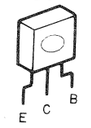


Q7



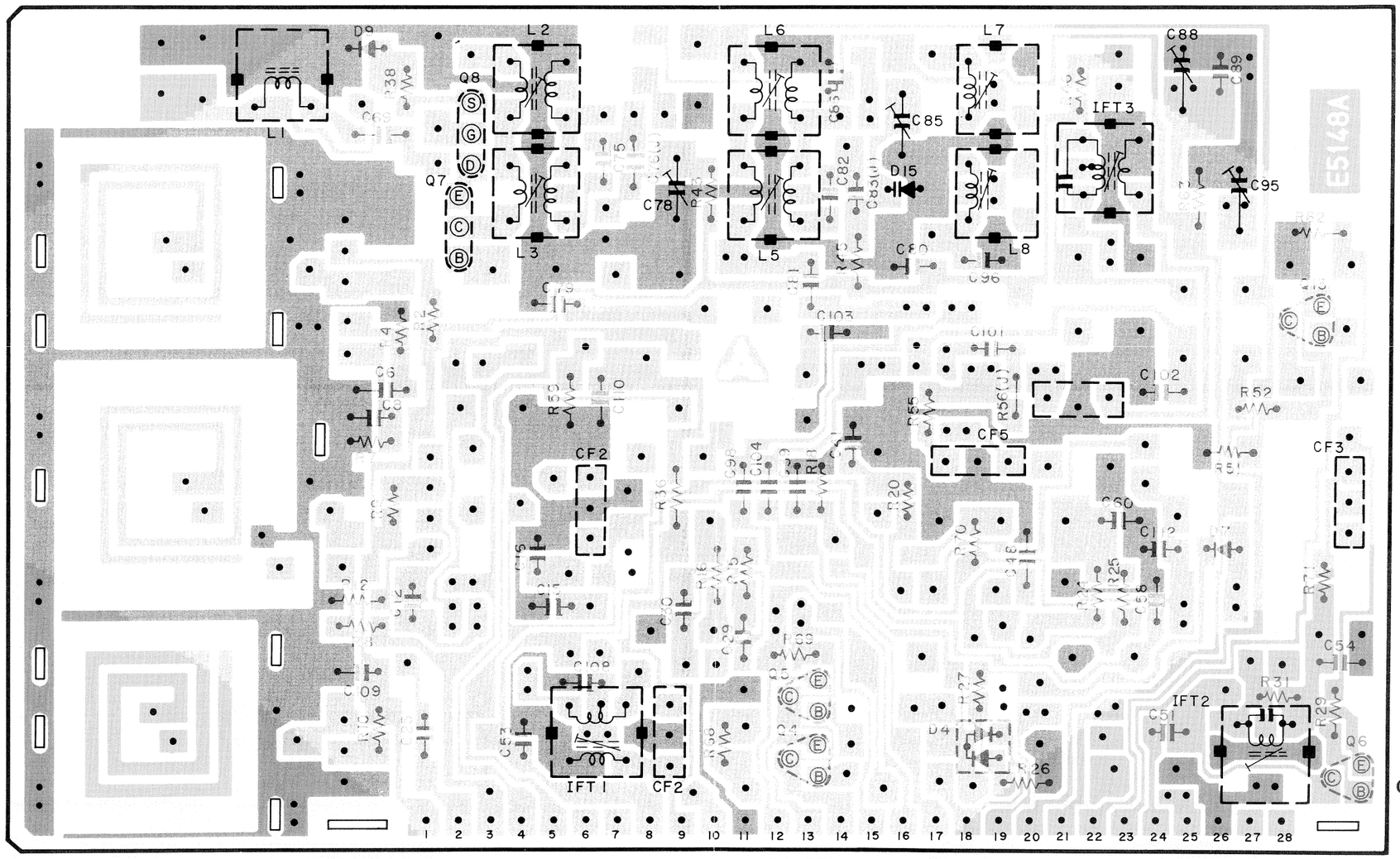
Q2

Q8



Other TRANSISTORS

Q7, Q8



Q13

Q13	
B	1.2V
C	0.6V
E	0.6V

Q6

Q4 Q5

- This figure the view as viewed from pattarn side.
- Chip parts and component side shown in red.

Q4		Q5	
B	2.9V	B	2.9V
C	4.9V	C	4.9V
E	2.4V	E	2.4V

Q6	
B	4.2V
C	5.0V
E	5.0V

one of these figures, Fig. 4 of 5 that best suits stable installation of this unit. Also check the electrical connections by referring to this operating instructions. Mount the unit to the car's dashboard as shown in Fig. 2.

4. After installation reconnect the negative (–) battery terminal.

UNIT REMOVAL

Remove the unit with the help of both the dismounting brackets into holes provided on the left and right of the escutcheon and pushing them in until a distinctive clicking can be heard (lock springs unlocked).

Remove the unit with the help of both the dismounting brackets as shown in Fig. 3.

To Secure the Rear of the Unit

- **Using the Rear Support Strap** (See Fig. 4)
  Fix one end of the Rear Support Strap to the rear of the unit, and the other end to the Fire Wall of Car.
- **Using the Rubber Cushion** (See Fig. 5)
  If there is an existing Rear Support Bracket on the Fire Wall of Car, simply place the Rubber Cushion over the protruding bolt on the rear of the unit. Then mount the rear of the unit ot the existing Rear Support Bracket.

wobei sicher gestellt werden muß, daß das Gerät richtig mit der Spritzwand verbunden ist. Danach das Gerät gemäß Abb. 4 oder 5 einbauen. Die elektrischen Anschlüsse gemäß Bedienungsanleitung vornehmen. Die Befestigung des Geräts im Armaturenbrett gemäß Abb. 2 vornehmen.

4. Nach dem Einbau das Gerät wieder an die negative (–) Batterieklemme anschließen.

AUSBAU

Für den Ausbau des Geräts die Abbaukonsolen in dafür vorgesehene Löcher links und rechts der Zierplatte stecken und eindrücken, bis ein Klicken zu hören ist (Die Riegel sind entsperrt).

Das Gerät mit Hilfe der beiden Abbaukonsolen herausnehmen (Abb. 3).

Befestigung der Geräterückseite

- **Mittels Stützstrebe** (Siehe Abb. 4)
  Ein Ende der Stützstrebe an der Rückseite des Gerätes befestigen und das andere Ende an der Spritzwand anbringen.
- **Mittels Gummikissen** (Siehe Abb. 5)
  Falls bereits an der Spritzwand eine hintere Stützkonsole angebracht ist, einfach das Gummikissen an der, an der Geräterückseite überstehenden Schraube anbringen. Danach die Geräterückseite richtig an der vorhandenen Stützkonsole montieren.

Installation Parts List / Liste der Einbauteile

Illust. No. / Ref. Nr.	Description / Benennung	Parts No. / Maschinenteile Nr.	Q'ty / Stückzahl
A101	Rear Support Strap / Hintere Stützstrebe	YEFG04010A	1
A102	Dismounting Bracket (U-shaped) / Abbaukonsolen (U-förmig)	YEFX999440	1
A103	Rubber Cushion / Gummikissen	YEFS01174	1
A104	Hex. Bolt (5mmø x 25mm) / Sechskantschraube (5mmø x 25mm)	XVG5C25FXS	1
A105	Spring Washer (5mmø) / Federscheibe (5mmø)	XWA5BFX	2
A106	Plain Washer (5mmø) / Unterlegescheibe (5mmø)	XWG5FX	2
A107	Hex. Nut (5mmø) / Sechskantmutter (5mmø)	XNG5AFXS	2
A108	Toothed Lock Washer (5mmø) / Gezahnte Sicherungsscheibe (5mmø)	XWC5CFX	1
A109	Mounting Case / Einbaugehäuse	YEFX0211710	1

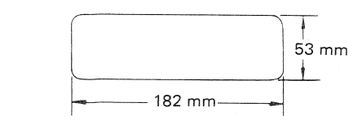


Fig. 1
Abb. 1

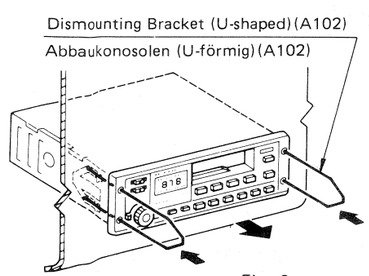


Fig. 3
Abb. 3

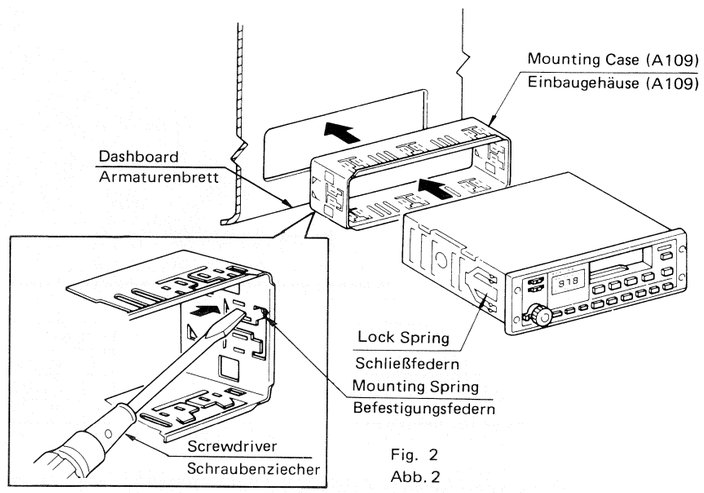


Fig. 2
Abb. 2

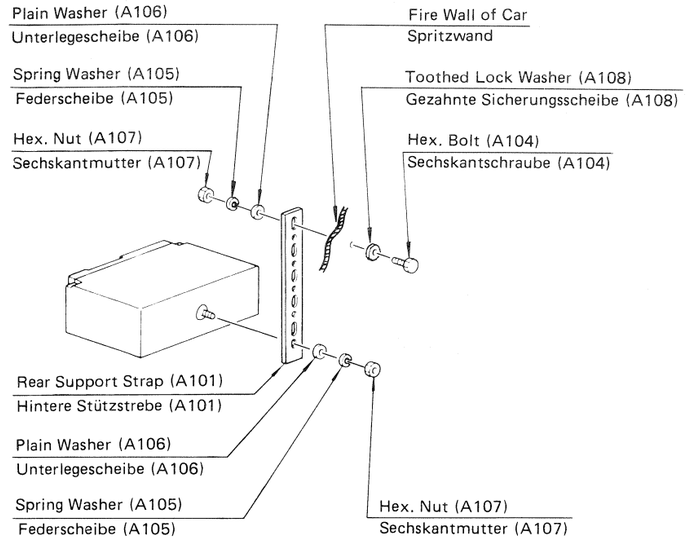


Fig. 4
Abb. 4

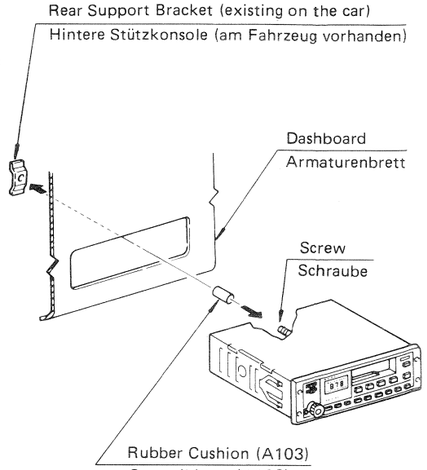


Fig. 5
Abb. 5

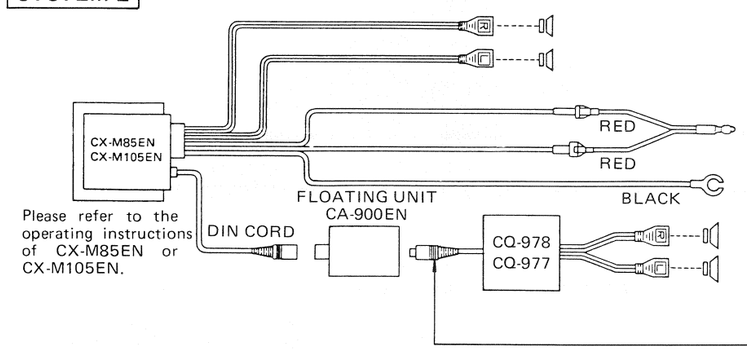
COMPOSITION
(CQ-977EE/EG, CQ-978EG)

SYSTEM 1

Please strictly observe the following wiring connection when installing any of these power amplifiers, CX-M85EN, CX-M105EN, CX-M1000EN or CX-M2000EN to the stereo cassette deck/tuner, CQ-978 or CQ-977.
If in doubt, please consult your dealer.

CAUTION: The DIN CORD should not be in contact with any of the POWER CORDS (Yellow and Red). Make sure to keep them away from each other.

SYSTEM 2



CAUTION: When installing the CX-M85EN or CX-M105EN to the PRE-AMP OUTPUT CONNECTOR of any of these models, CQ-978 or CQ-977, be sure to connect the Floating Unit (CA-900EN).

WIRING DIAGRAM MODEL CQ-977EE/EG, 978EG(RADIO BLOCK)

Q1		Q3		Q9		Q10	
B	0.1V	B	0.2V	B	4.6V	B	0.1V
C	5.2V	C	5.0V	C	4.3V	C	0.2V
E	0V	E	0.9V	E	4.1V	E	0V

IC4							
1	4.4V	7	2.0V	13	0V	19	2.3V
2	0V	8	4.1V	14	4.0V	20	1.6V
3	2.0V	9	4.1V	15	1.5V	21	0V
4	0.6V	10	6.4V	16	4.0V	22	0V
5	3.0V	11	8.0V	17	6.1V	23	3.6V
6	0V	12	8.2V	18	6.0V	24	0.1V

ANTENNA RECEPTACLE

Q11		Q12	
B	0.7V	B	0.7V
C	0.6V	C	0V
E	0V	E	0V

Q2	
D	7.7V
G1	4.3V
G2	5.2V
S	4.3V

IC1	
1	0V
2	4.4V
3	8.0V
4	0.4V
5	0.9V
6	2.5V
7	2.5V
8	0V
9	3.2V
10	3.4
11	1.7V
12	1.1V
13	5.0V
14	1.7V
15	8.0V
16	8.0V
17	3.5V
18	3.5V
19	0V
20	0V
21	2.5V
22	2.5V
23	3.2V
24	1.1V
25	2.5V
26	0.7V
27	4.7V
28	5.2V
29	8.0V
30	0V
31	7.4V
32	4.4V

IC2		IC3	
1	0V	1	0V
2	2.6V	2	5.0V
3	2.6V	3	1.2V
4	1.6V	4	2.1V
5	2.6V	5	2.6V
6	2.6V	6	2.6V
7	2.6V	7	2.5V
8	2.6V	8	2.5V
9	4.8V	9	2.8V
10	2.5V	10	5.0V
11	2.5V	11	5.0V
12	2.6V	12	0.7V
13	2.6V	13	1.0V
14	2.6V	14	1.1V
15	1.9V	15	1.5V
16	1.3V	16	5.0V
17	0V	17	0V
18	2.7V	18	5.0V
19	1.5V	19	3.2V
20	8.0V	20	4.1V
21	1.8V	21	4.3V
22	0V	22	4.3V
23	1.0V	23	4.3V
24	0.7V	24	3.8V
25	2.9V	25	0V
26	0V	26	0V
27	2.9V	27	0.7V
28	0V	28	1.9V
29	2.6V	29	1.9V
30	2.6V	30	3.0V
31	0V	31	3.0V
32	5.3V	32	3.0V

- This figure shows parts viewed from pattern side.
- Chip parts and component side shown in red.

SCHEMATIC DIAGRAM MODEL CQ-977EE/EG, 978EG(RADIO BLOCK)

E-5148A

NOTES:

1) Voltage measurements are with respect to ground, with a digital voltmeter, with controls set for normal operation, no signal applied, 14.4 V DC, power supply.
2) IF: MW 450 kHz
   LW 450 kHz
   UKW(FM) 10.7 MHz
3) Frequency Range:
   MW 531 ~ 1602 kHz
   LW 153 ~ 281 kHz
   UKW(FM) 87.5 ~ 108.0 MHz

- Exact value determined by production process. This schematic diagram is the latest at the time of printing and subject to change without notice. Replace same value as original parts.
- Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

Name	Voltage
VAR	3.0V
FM OSC	0V
FM Vcc	8V
SSC	0.2V
V. REF	2.5V
MIX	0V
IF	0V
FM Vcc	5V
DX/LOC	0V
ST. IND	0V
GND	0V
Rch OUT	2.4V
Lch OUT	2.4V
Vcc 5V	5.0V
PNL IN	2.5V
AM OSC	0V
AM IF OUT	0V
FM MONO	0.7V
FM CONT	1.0V
LW CONT	0V
FM DET OUT	2.9V
AM Vcc	0V (8V)
MW CONT	0V
FM IF OUT	0V
FM SD OUT	0.7V
GND	0V
AM DET OUT	0V
AM AMP IN	0V

This Voltage is at FM.

DX/LOC SWITCHING
Q9 YEANC1623
Q10 UN2213TW

DX/LOC SWITCHING
Q1 UN2213TW

AM SWITCHING
Q13 YEANC1623

LW/MW SWITCHING
Q11, 12 2SD1030TW

AM RF AMP, CONV, IF AMP, DET
IC4 YEAMUPC1296G

AGC RF AMP
Q7 2SC1684RST
Q8 YEAN2SK519

FM RF AMP
Q2 YEANK131LT2

D1, 2, 3
YEADKV1340A

D8
MA151ATW

D9
MA151K

D10 MA153TW

D12, 15, 16
YEADSVC321CD

D1 to D3
YEADKV1340AS

D4 MA153TX

D14
YEADSVC321CD

FM ASC SWITCHING
Q3 YEANC1623

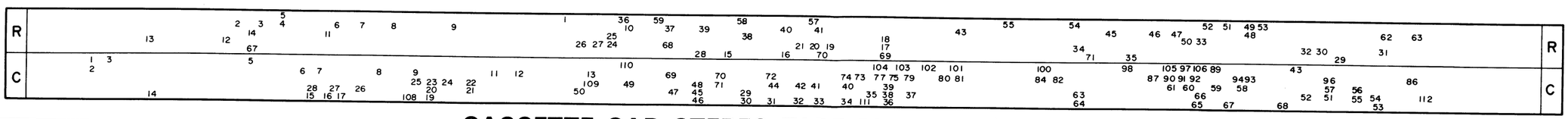
FM FRONT END
IC1 AN7264C

AF BUFFER AMP
Q4, 5 YEANC1623

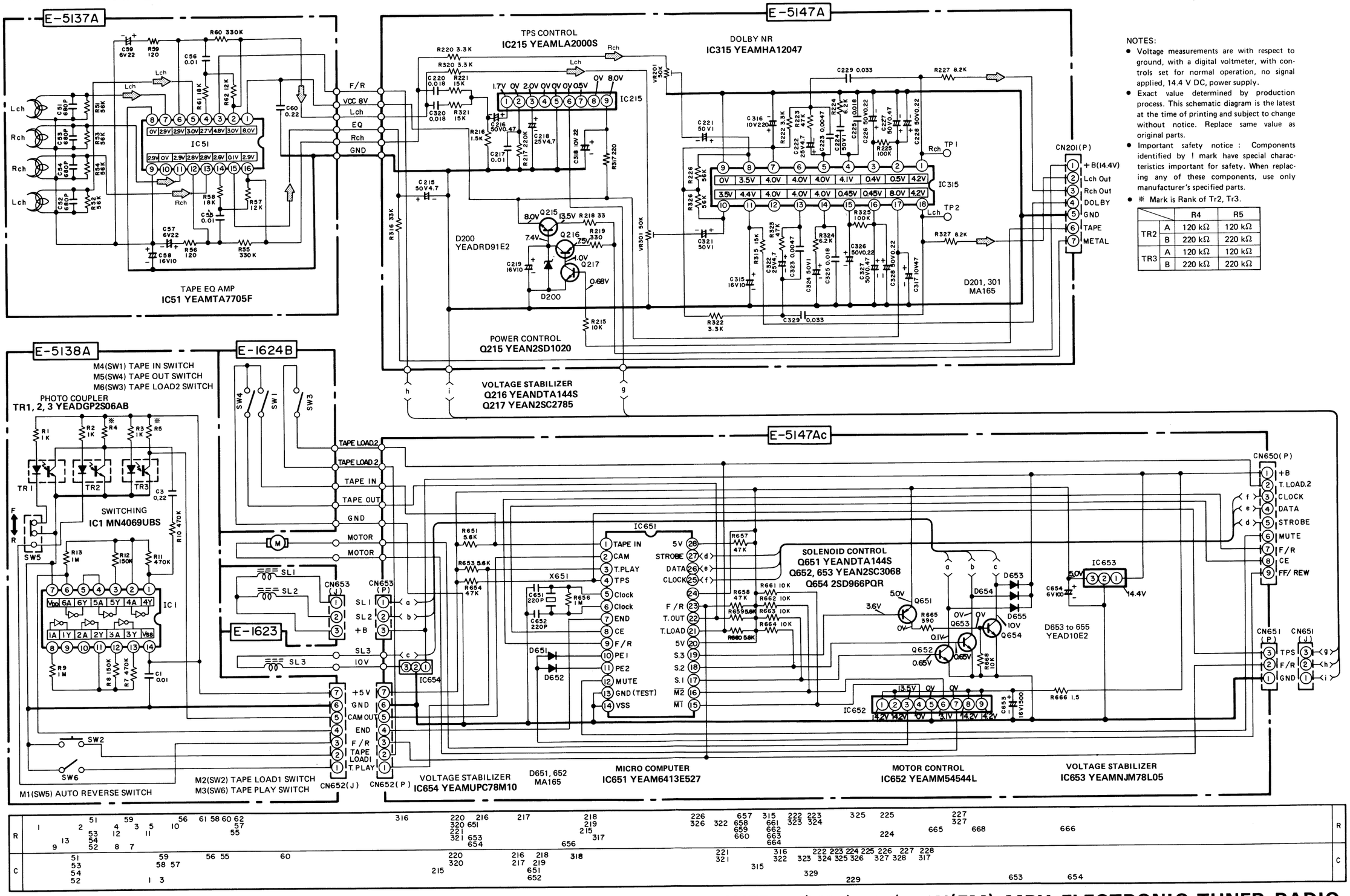
FM EIA AND MPX
IC2 AN7466C

FM IF AMP w/DETECTOR
IC3 AN7268C

FM IF SWITCHING
Q6 YEANA812



SCHEMATIC DIAGRAM MODEL CQ-977EE/EG(TAPE BLOCK)

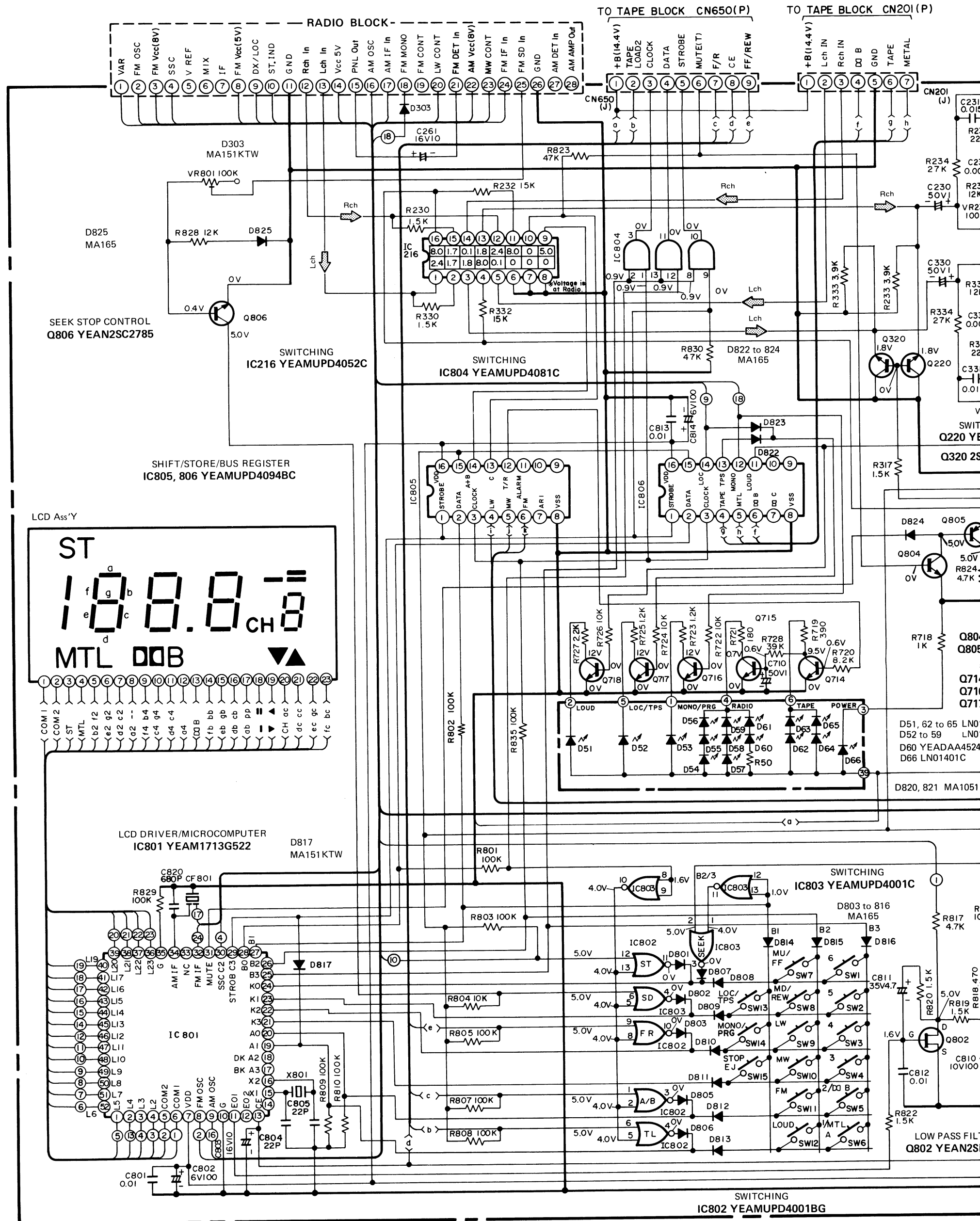


NOTES:

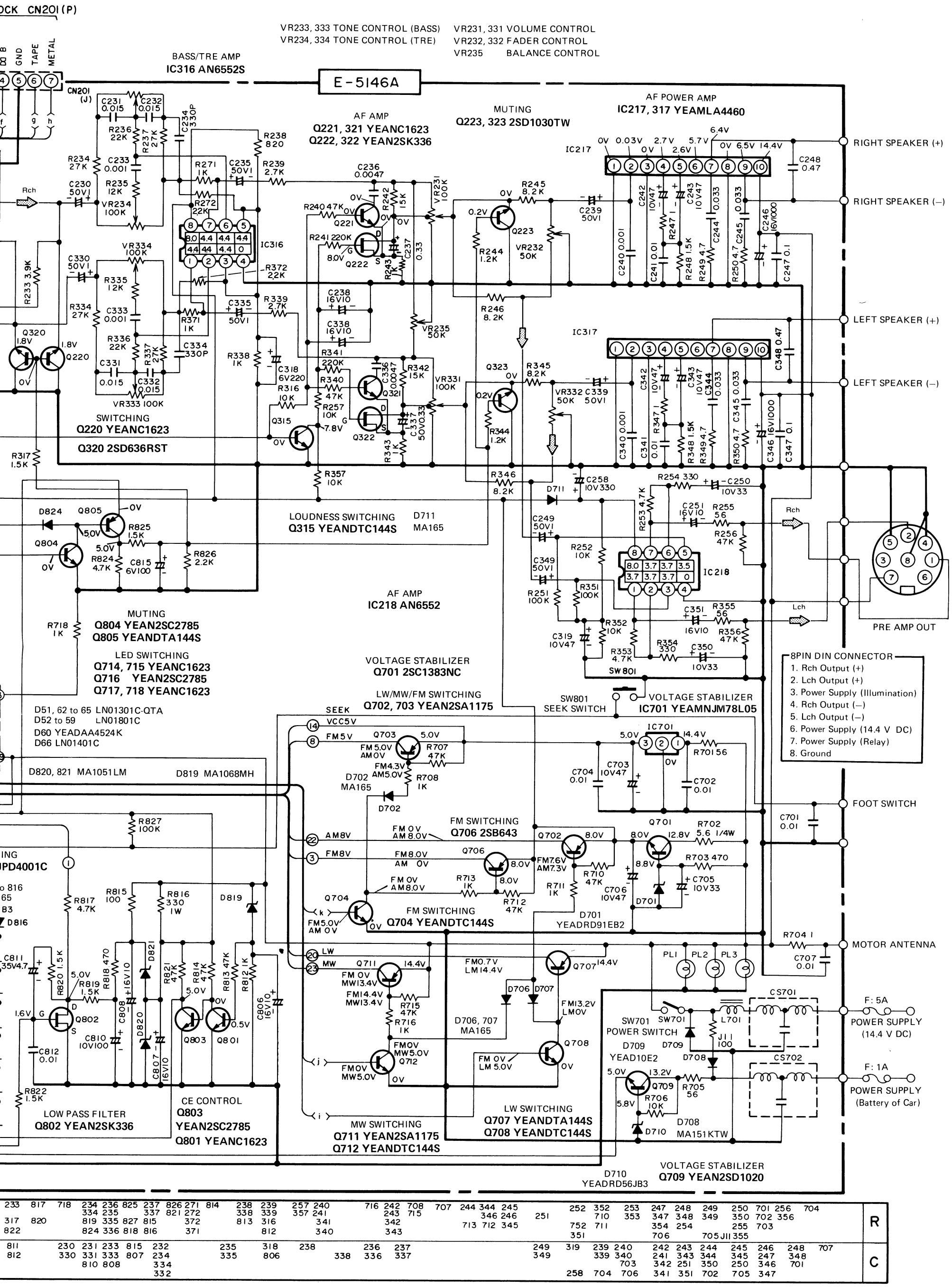
- Voltage measurements are with respect to ground, with a digital voltmeter, with controls set for normal operation, no signal applied, 14.4 V DC, power supply.
- Exact value determined by production process. This schematic diagram is the latest at the time of printing and subject to change without notice. Replace same value as original parts.
- Important safety notice : Components identified by ! mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- ※ Mark is Rank of Tr2, Tr3.

		R4	R5
TR2	A	120 kΩ	120 kΩ
	B	220 kΩ	220 kΩ
TR3	A	120 kΩ	120 kΩ
	B	220 kΩ	220 kΩ

SCHEMATIC DIAGRAM MODEL CQ-977EE/EG(CONTROL AND AUDIO BLOCK)



| | | |

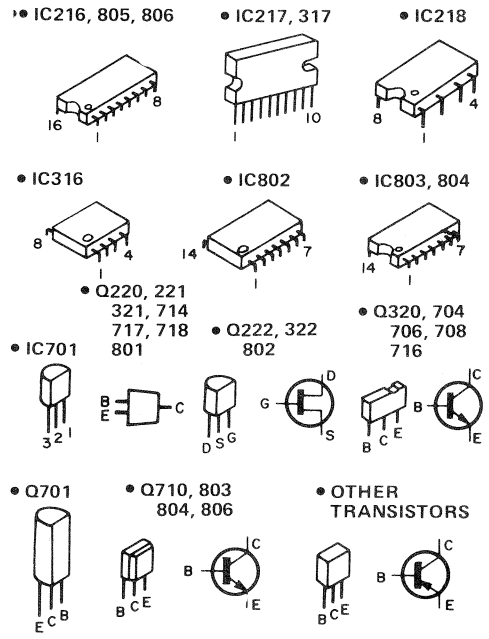


233	817	718	234	236	825	237	826	271	814	238	239	257	240	716	242	708	707	244	344	245	251	252	352	253	247	248	249	250	701	256	704	R
317	820		334	235		337	821	272		338	339	357	241		243	715			346	246		752	710	353	347	348	349	350	702	356			
822			819	335	827	815		372		813	316		341		342			713	712	345		351	711		354	254		255	703				
			824	336	818	816		371			812		340		343										706		705	JII	355					
811		230	231	233	815	232			235		318	238		236	237						249	319	239	240	242	243	244	245	246	248	707		C
812		330	331	333	807	234			335		806		338	336	337						349		339	340	241	343	344	345	247	348				
			810	808		334																		703	342	251	350	250	346	701				
						332																258	704	706	341	351	702	705	347					

CASSETTE CAR STEREO TAPE PLAYER w/LW/MW/UKW(FM) MPX ELECTRONIC TUNER RADIO

WIRING DIAGRAM MODEL CQ-977EE/EG(CONTROL AND AUDIO BLOCK)

■ ICs & TRANSISTORS



RADIO BLOCK
E-5148A

Refer to the page 27 about this part.

To TAPE BLOCK CN650(P)

CN650(J)

1 2 3 4 5 6 7 8 9

BRN RED ORG YEL GRN BLU VLT GRY WHT

IC803	
1	4.0V
2	5.0V
3	0 V
4	0 V
5	4.0V
6	5.0V
7	0 V
8	1.6V
9	1.6V
10	4.0V
11	4.0V
12	1.0V
13	1.0V
14	5.0V

IC804	
1	0.9 V
2	0.9 V
3	0 V
4	0 V
5	0 V
6	0 V
7	0 V
8	0.9 V
9	0 V
10	0 V
11	0 V
12	0.9 V
13	0.9 V
14	5.0 V

CN201(J)

1 2 3 4 5 6 7

BRN RED ORG YEL GRN BLU VLT

To TAPE BLOCK CN201(P)

IC802			
1	5.0V	8	4.0 V
2	4.0V	9	5.0V
3	0 V	10	0 V
4	0 V	11	0 V
5	4.0V	12	5.0 V
6	5.0V	13	4.0V
7	0 V	14	5.0 V

Q714	
B	0.6 V
C	9.5V
E	0 V

Q715	
B	0.6 V
C	0.7 V
E	0 V

Q716	
B	0 V
C	12 V
E	0 V

Q717	
B	0 V
C	12 V
E	0 V

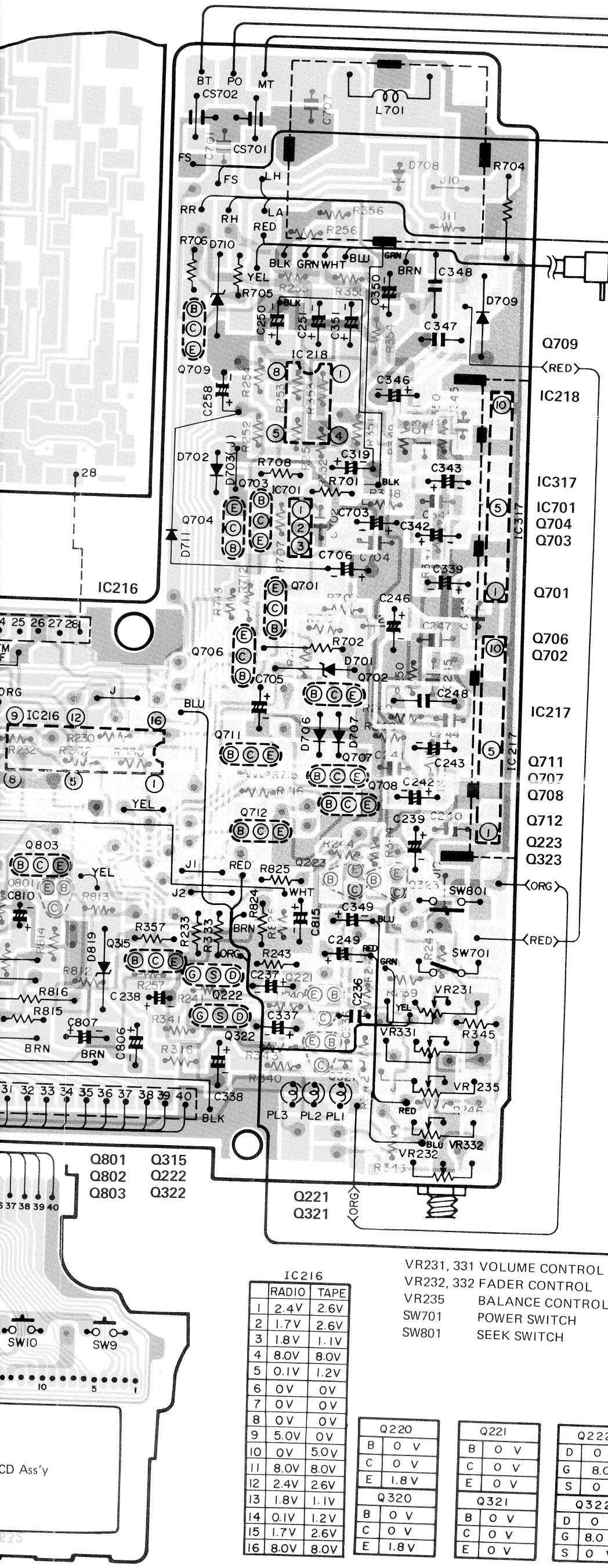
Q718	
B	0 V
C	12 V
E	0 V

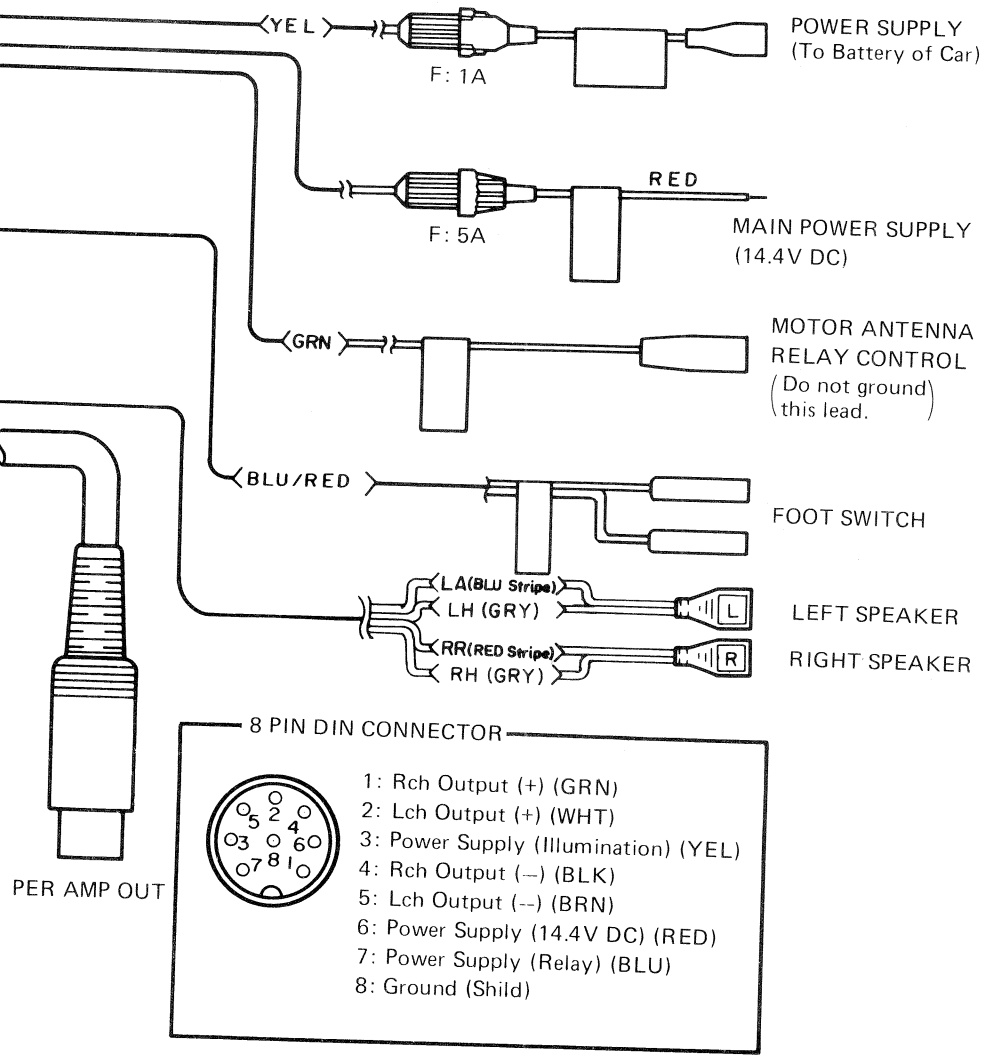
Q714 to 718

SW1 PRESET 6 SWITCH
SW2 PRESET 5 SWITCH
SW3 PRESET 4 SWITCH
SW4 PRESET 3 SWITCH
SW5 PRESET 2 / DOLBY B SWITCH
SW6 PRESET 1 / METAL SWITCH
SW7 MU / FF SWITCH
SW8 MD / REW SWITCH
SW9 LW SWITCH
SW10 MW SWITCH
SW11 FM SWITCH
SW12 LOUDNESS SWITCH
SW13 LOC / TPS
SW14 MONO / PRG SWITCH
SW15 STOP /EJ SWITCH

• This P.C.B. the view as viewed from the parts mounting surface.

LCD Ass'y





at FM

Q701	
B	8.8 V
C	12.8 V
E	8.0 V

Q702	
B	8.0V
C	FM 0V AM 8.0V
E	FM 7.6V AM 7.3V

Q703	
B	FM 5.0V AM 4.5V
C	FM 5.0V AM 0V
E	5.0 V

Q704	
B	FM 5.0V AM 0V
C	FM 0V AM 8.0V
E	0 V

Q706	
B	8.0V
C	FM 8.0V AM 0V
E	8.0V

Q707	
B	FM 13.2V AM 0 V
C	FM 0.7V LW 14.4V
E	14.4 V

Q708	
B	FM 0 V LW 5.0V
C	FM 13.2V LW 0V
E	0 V

Q709	
B	5.8 V
C	13.2V
E	5.0V

Q711	
B	FM 14.4V MW 13.4V
C	FM 0V MW 13.4V
E	14.4V

Q712	
B	FM 0V MW 5.0V
C	FM 0V MW 5.0V
E	0V

Q223	
B	0.2V
C	0 V
E	0 V

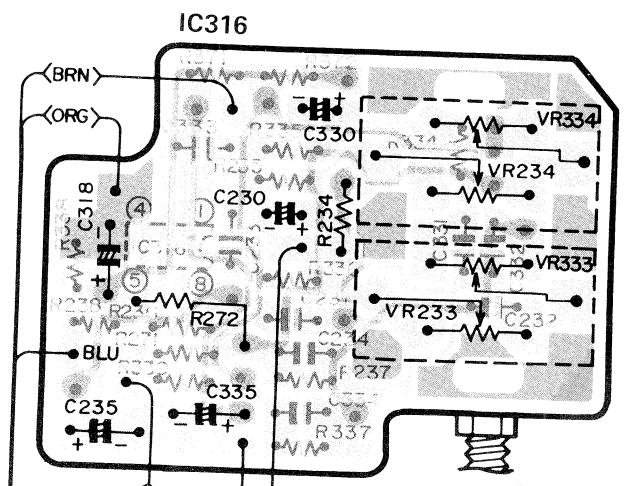
Q323	
B	0.2V
C	0 V
E	0 V

IC217, 317	
1	0 V
2	0.03V
3	0 V
4	2.7V
5	2.6V
6	5.7V
7	6.4V
8	0 V
9	6.5V
10	14.4 V

IC701	
1	14.4 V
2	0 V
3	5.0V

IC218	
1	3.7V
2	3.7V
3	3.7V
4	0 V
5	3.5V
6	3.7V
7	3.7V
8	8.0V

IC316



IC316			
1	4.4 V	5	4.4 V
2	4.4 V	6	4.4 V
3	4.4 V	7	4.4 V
4	0 V	8	8.0V

VR233, 333 TONE CONTROL (BASS)
VR234, 334 TONE CONTROL (TRE)

VR231, 331 VOLUME CONTROL
VR232, 332 FADER CONTROL
VR235 BALANCE CONTROL
SW701 POWER SWITCH
SW801 SEEK SWITCH

* Chip and component part are shown in red.

IC216

	RADIO	TAPE
1	2.4V	2.6V
2	1.7V	2.6V
3	1.8V	1.1V
4	8.0V	8.0V
5	0.1V	1.2V
6	0V	0V
7	0V	0V
8	0V	0V
9	5.0V	0V
10	0V	5.0V
11	8.0V	8.0V
12	2.4V	2.6V
13	1.8V	1.1V
14	0.1V	1.2V
15	1.7V	2.6V
16	8.0V	8.0V

Q220	
B	0 V
C	0 V
E	1.8 V

Q320	
B	0 V
C	0 V
E	1.8 V

Q221	
B	0 V
C	0 V
E	0 V

Q321	
B	0 V
C	0 V
E	0 V

Q222	
D	0 V
G	8.0V
S	0 V

Q322	
D	0 V
G	8.0 V
S	0 V

Q223	
B	0.2 V
C	0 V
E	0 V

Q323	
B	0.2 V
C	0 V
E	0 V

Q315	
B	0 V
C	7.8 V
E	0 V

Q801	
B	0.5V
C	0 V
E	0 V

Q802	
D	5.0 V
G	1.6 V
S	0 V

Q803	
B	0 V
C	5.0 V
E	0 V

Q804	
B	0 V
C	5.0V
E	0 V

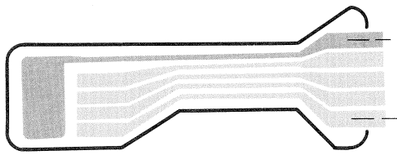
Q805	
B	5.0 V
C	5.0 V
E	0 V

Q806	
B	0.4V
C	5.0V
E	0 V

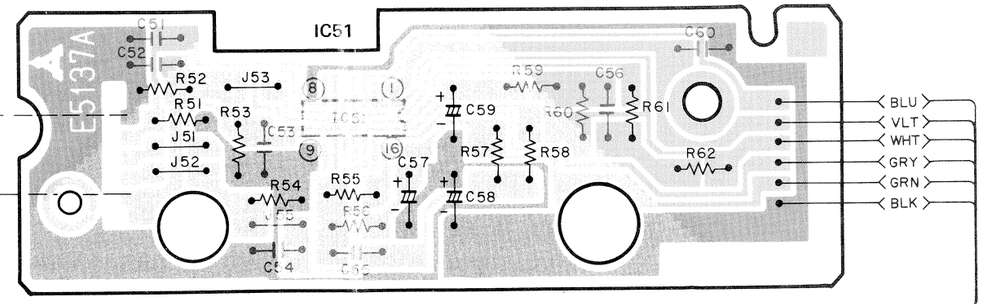
CASSETTE CAR STEREO TAPE PLAYER w/LW/MW/UKW(FM) MPX ELECTRONIC TUNER RADIO

WIRING DIAGRAM MODEL CQ-977EE/EG(TAPE BLOCK)

● Chip parts and component side are shown in red.



This P.C.B the view as viewed from the back side.



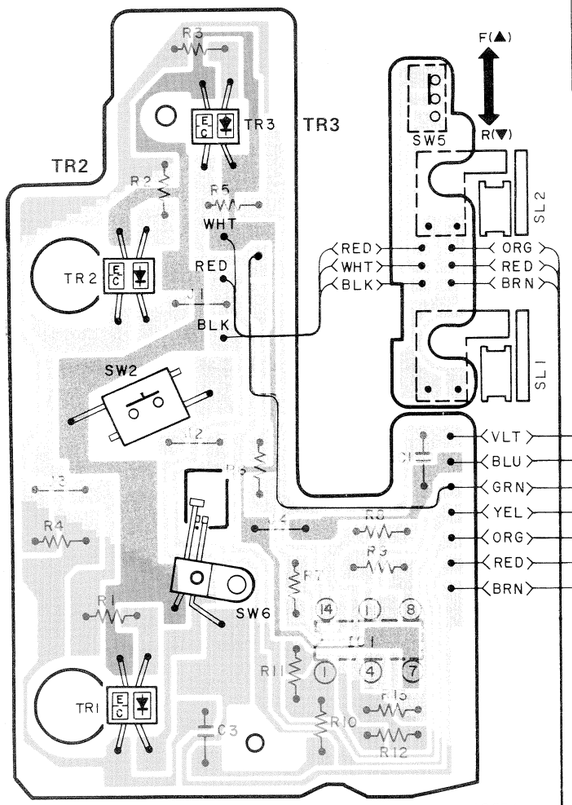
IC51					
1	8.0V	6	2.9V	11	2.9V
2	3.0V	7	2.9V	12	2.8V
3	4.8V	8	0V	13	2.8V
4	2.7V	9	2.9V	14	2.6V
5	3.0V	10	0V	15	0.1V
				16	2.9V

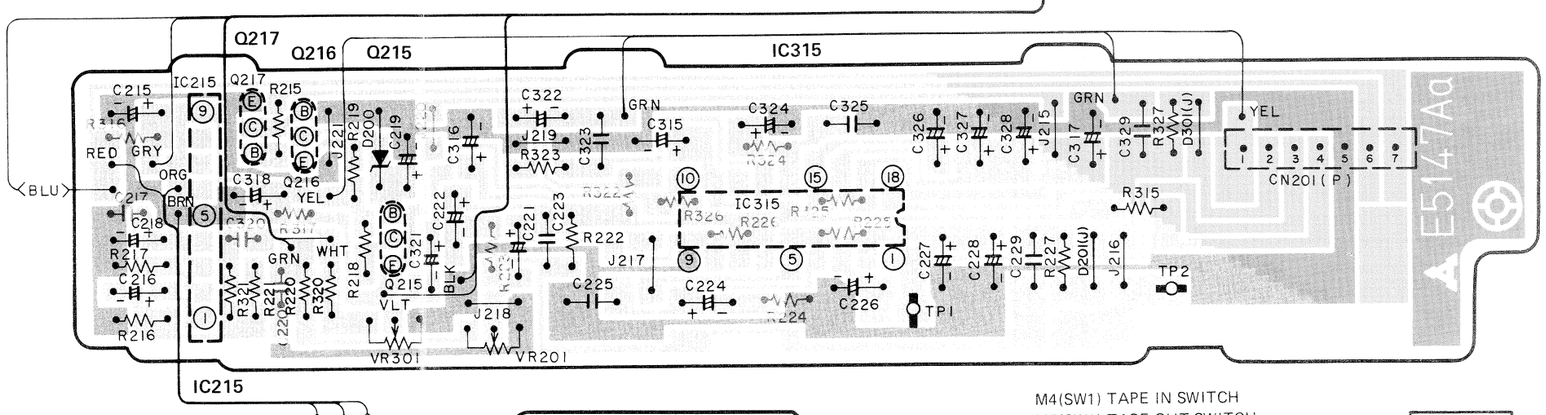
IC315					
1	4.2V	7	4.0V	13	4.0V
2	0.5V	8	3.5V	14	4.0V
3	0.4V	9	0V	15	0.45V
4	4.1V	10	3.5V	16	0.45V
5	4.0V	11	4.4V	17	8.0V
6	4.0V	12	4.0V	18	4.2V

IC 215	
1	1.7V
2	0V
3	2.0V
4	0V
5	0V
6	0V
7	0.5V
8	0V
9	8.0V

at APS ON

M1(SW5) AUTO REVERSE SWITCH
SL1, 2 PLUNGER SOLENOID

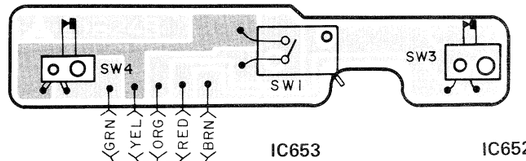




Q215	
B	7.4V
C	13.5V
E	8.0V
Q216	
B	1.0V
C	7.4V
E	7.5V
Q217	
B	0.68V
C	1.0V
E	0V

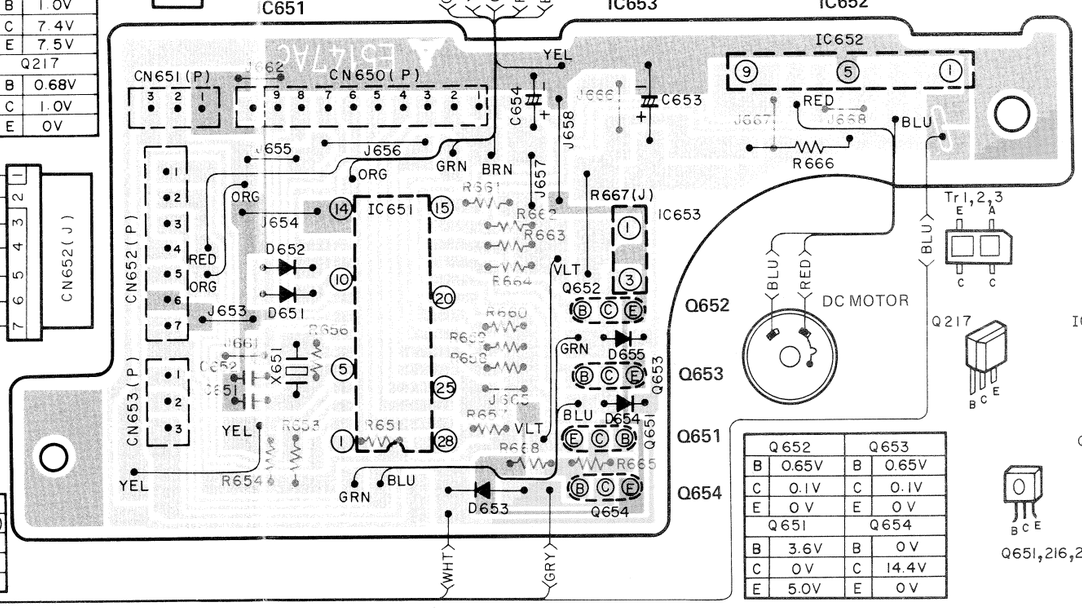
	PLAY (▲▼)	FF (▲)	REW (▼)
VLT	5.0V	5.0V	5.0V
BLU	0V	0V	0V
GRN	0.2V	5.0V	0.2V
YEL	—	1.5V	1.5V
ORG	0V	0.2V	0V
RED	0V	0V	0V
BRN	0V	5.0V	5.0V

M4(SW1) TAPE IN SWITCH
M5(SW4) TAPE OUT SWITCH
M6(SW3) TAPE LOAD2 SWITCH



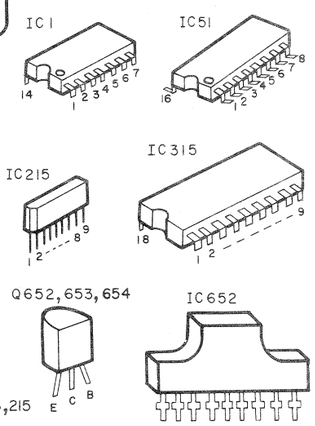
IC652	
1	14.2V
2	14.2V
3	13.5V
4	0V
5	0V
6	3.1V
7	0V
8	14.2V
9	14.2V

IC653	
1	14.4V
2	0V
3	5.0V



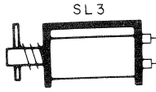
Q652		Q653	
B	0.65V	B	0.65V
C	0.1V	C	0.1V
E	0V	E	0V
Q651		Q654	
B	3.6V	B	0V
C	0V	C	14.4V
E	5.0V	E	0V

ICs & TRANSISTORS



M2(SW2) TAPE LOAD1 SWITCH
M3(SW6) TAPE PLAY SWITCH
SL3 SPRING PLUNGER SOLENOID

IC654	
1	14.4V
2	0V
3	10V

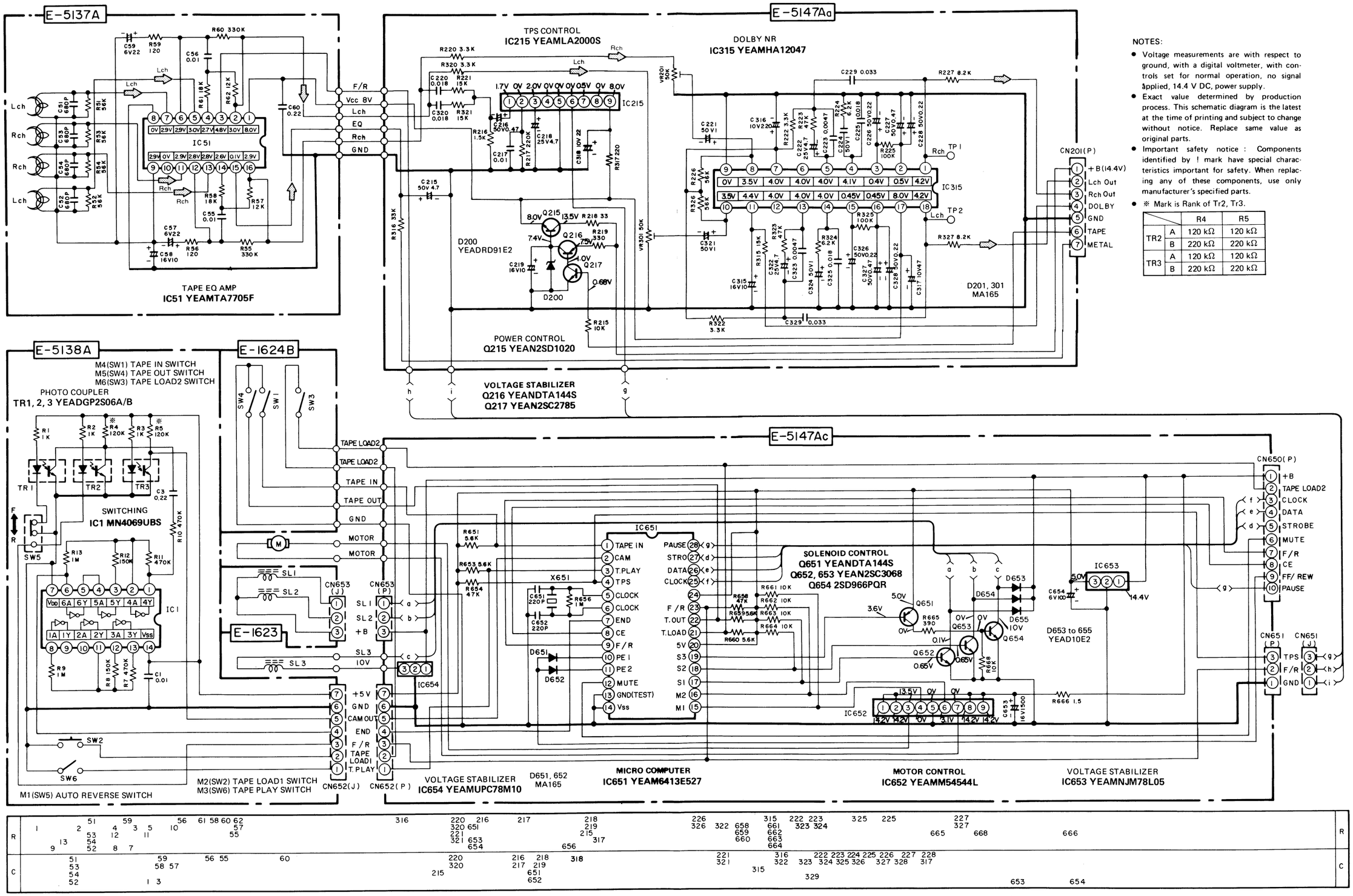


CN653	Play(▲▼)	FF(▲)	REW(▼)
1	0V	0V	14.4V
2	0V	14.4V	0V
3	14.4V	14.4V	14.4V

CASSETTE CAR STEREO TAPE PLAYER w/LW/MW/UKW(FM) MPX ELECTRONIC TUNER RADIO

Mar., 1985

SCHEMATIC DIAGRAM MODEL CQ-978EG(TAPE BLOCK)



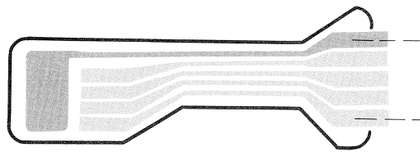
NOTES:

- Voltage measurements are with respect to ground, with a digital voltmeter, with controls set for normal operation, no signal applied, 14.4 V DC, power supply.
- Exact value determined by production process. This schematic diagram is the latest at the time of printing and subject to change without notice. Replace same value as original parts.
- Important safety notice : Components identified by ! mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- ※ Mark is Rank of Tr2, Tr3.

		R4	R5
TR2	A	120 kΩ	120 kΩ
	B	220 kΩ	220 kΩ
TR3	A	120 kΩ	120 kΩ
	B	220 kΩ	220 kΩ

WIRING DIAGRAM MODEL CQ-978EG(TAPE BLOCK)

● Chip parts and component side are shown in red.



This P.C.B the view as viewed from the back side.

IC 215	
1	1.7V
2	0 V
3	2.0V
4	0 V
5	0 V
6	0 V
7	0.5V
8	0 V
9	8.0V

at APS ON

M1(SW5) AUTO REVERSE SWITCH
SL1, 2 PLUNGER SOLENOID

IC51					
1	8.0V	6	2.9V	11	2.9V
2	3.0V	7	2.9V	12	2.8V
3	4.8V	8	0 V	13	2.8V
4	2.7V	9	2.9V	14	2.6V
5	3.0V	10	0 V	15	0.1V
				16	2.9V

IC315					
1	4.2V	7	4.0V	13	4.0V
2	0.5V	8	3.5V	14	4.0V
3	0.4V	9	0 V	15	0.45V
4	4.1V	10	3.5V	16	0.45V
5	4.0V	11	4.4V	17	8.0V
6	4.0V	12	4.0V	18	4.2V

Q215	
B	7.4V
C	13.5V
E	8.0V
Q216	
B	1.0V
C	7.4V
E	7.5V
Q217	
B	0.68V
C	1.0V
E	0V

	PLAY (▲▼)	FF (▲)	REW (▼)
VLT	5.0V	5.0V	5.0V
BLU	0V	0V	0V
GRN	0.2V	5.0V	0.2V
YEL	—	1.5V	1.5V
ORG	0V	0.2V	0V
RED	0V	0V	0V
BRN	0V	5.0V	5.0V

M4(SW1) TAPE IN SWITCH
M5(SW4) TAPE OUT SWITCH
M6(SW3) TAPE LOAD2 SWITCH

IC652	
1	14.2V
2	14.2V
3	13.5V
4	0 V
5	0 V
6	3.1V
7	0 V
8	14.2V
9	14.2V

IC653	
1	14.4V
2	0 V
3	5.0V

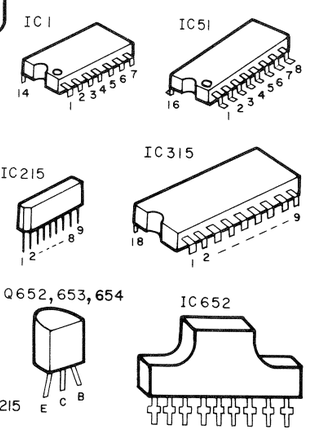
M2(SW2) TAPE LOAD1 SWITCH
M3(SW6) TAPE PLAY SWITCH
SL3 SPRING PLUNGER SOLENOID

IC654	
1	14.4V
2	0 V
3	10V

CN653	Play(▲▼)	FF(▲)	REW(▼)
1	0V	0V	14.4V
2	0V	14.4V	0V
3	14.4V	14.4V	14.4V

Q652	
B	0.65V
C	0.1V
E	0V
Q653	
B	0.65V
C	0.1V
E	0V
Q651	
B	3.6V
C	0V
E	5.0V
Q654	
B	0V
C	14.4V
E	0V

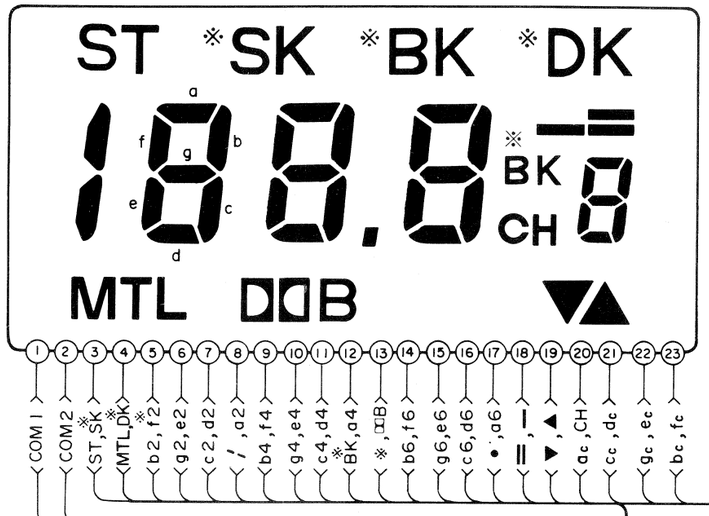
ICs & TRANSISTORS



OPERATION OF MICROCOMPUTER/BEDIENUNG DES MIKROCOMPUTER

Function of microcomputer (YEAM1713G522)

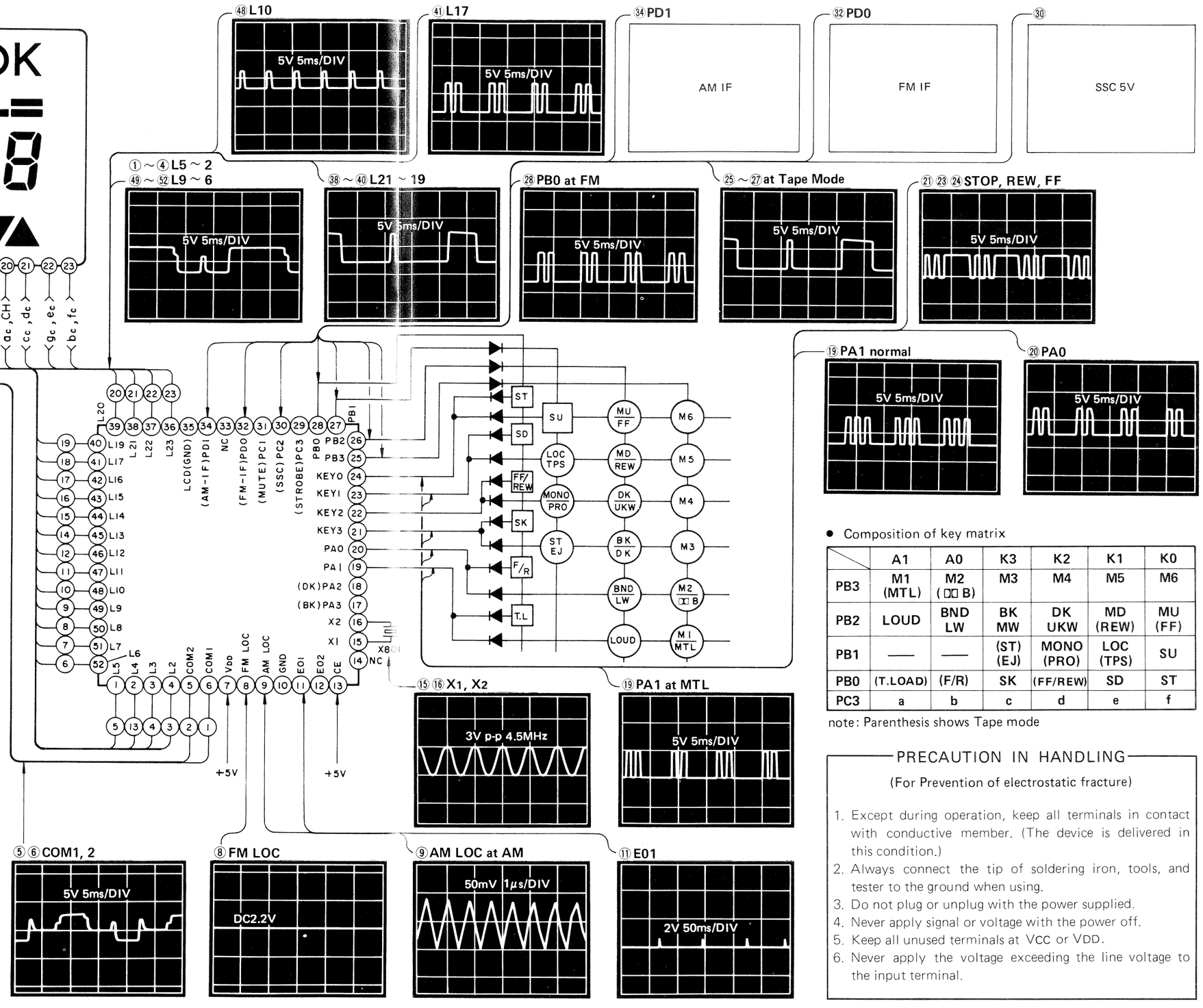
- Display and connection of segment



The ※ mark is at CQ-978EG

- Name of terminals discription of connection

Terminal	Port	Description
1~4	LCD5~2	LCD segment signal output
5, 6	COM2, 1	Common signal output for LCD
7	V_{DD}	Power supply +5V ±0.5V
8	FM LOC	FM local signal input
9	AM LOC	AM local signal input
10	GND	Ground terminal
11	E01	Phase detection output terminal with same content
12	E02	
13	CE	Chip enable input
14	NC	Blank
15, 16	X_1, X_2	4.5 MHz crystal oscillator
17	PA3	BK input terminal
18	PA2	DK input terminal
19~20	PA1~0	Key matrix input
21~24	KEY3~0	Key matrix input
25	PB3	Key return signal source
26	PB2	Clock output
27	PB1	Data 1 output
28	PB0	Data 0 output
29	PC3	STROBE
30	PC2	SSC
31	PC1	MUTE
32	PD0	IF counter input terminal FM
33	NC	Not used
34	PD1	IF counter input terminal MW/LW
35	GND	GND for LCD
36~40	LCD23~19	LCD segment signal output
41~52	LCD17~6	



- Composition of key matrix

	A1	A0	K3	K2	K1	K0
PB3	M1 (MTL)	M2 (□□ B)	M3	M4	M5	M6
PB2	LOUD	BND LW	BK MW	DK UKW	MD (REW)	MU (FF)
PB1	——	——	(ST) (EJ)	MONO (PRO)	LOC (TPS)	SU
PB0	(T.LOAD)	(F/R)	SK	(FF/REW)	SD	ST
PC3	a	b	c	d	e	f

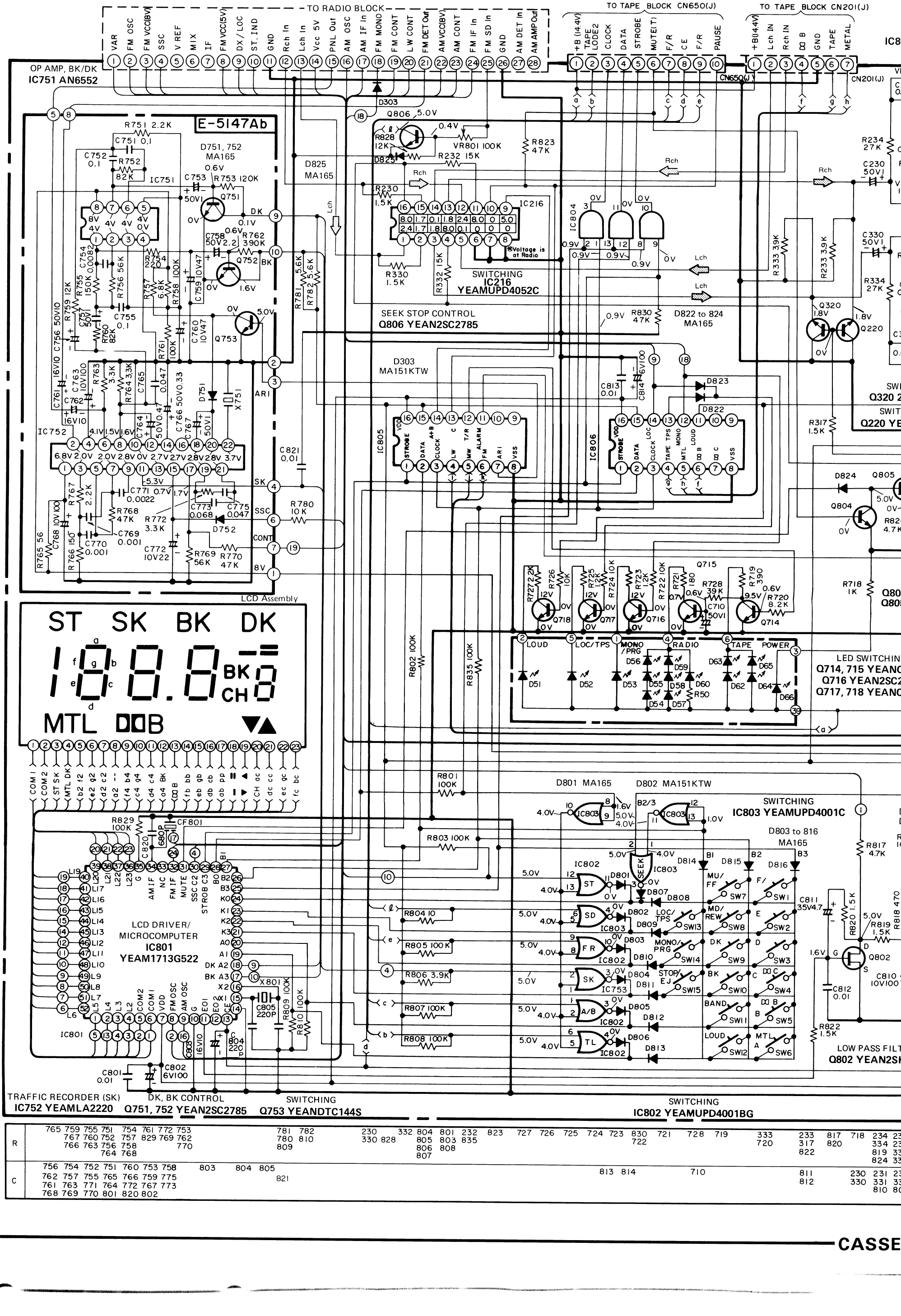
note: Parenthesis shows Tape mode

PRECAUTION IN HANDLING

(For Prevention of electrostatic fracture)

1. Except during operation, keep all terminals in contact with conductive member. (The device is delivered in this condition.)
2. Always connect the tip of soldering iron, tools, and tester to the ground when using.
3. Do not plug or unplug with the power supplied.
4. Never apply signal or voltage with the power off.
5. Keep all unused terminals at Vcc or VDD.
6. Never apply the voltage exceeding the line voltage to the input terminal.

SCHEMATIC DIAGRAM MODEL CQ-978EG(CONTROL AND AUDIO BLOCK)


TO RADIO BLOCK
VAR FM OSC FM VCC(8V) SSC V REF MIX IF FM VCC(5V) DX/LOC ST. IND GND Rch In Lch In Vcc 5V PNL Out AM OSC AM IF In FM MONO FM CONT LW CONT FM DET Out AM VCC(8V) AM CONT FM IF In FM SD In GND AM DET In AM AMP Out
TO TAPE BLOCK CN650(J)
+B (14.4V) TAPE LODE2 CLOCK DATA STROBE MUTE(T) F/R CE F/R PAUSE
TO TAPE BLOCK CN201(J)
+B(14.4V) Lch IN Rch IN GND TAPE METAL
CN650(J)
CN201(J)
OP AMP, BK/DK
IC751 AN6552
E-5147Ab
D303
MA151KTW
D825
MA165
D751, 752
MA165
Q806 5.0V
0.4V
VR801 100K
R828 12K
D825
R232 15K
R823 47K
R230 1.5K
IC216
SWITCHING
IC216
YEAMUPD4052C
SEEK STOP CONTROL
Q806 YEAN2SC2785
D822 to 824
MA165
R830 47K
IC804
R333 3.9K
R233 3.9K
R234 27K
C230 50V1
C330 50V1
R334 27K
Q320 1.8V
Q220
IC752
IC752 YEAMLA2220
TRAFFIC RECORDER (SK)
Q751, 752 YEAN2SC2785
DK, BK CONTROL
Q753 YEANDTC144S
SWITCHING
IC801
YEAM1713G522
LCD DRIVER/
MICROCOMPUTER
IC805
IC806
D823
D822
C813 0.01
C814 6V100
R317 1.5K
D824
Q805
Q804
R718 1K
Q715
Q718
Q717
Q716
Q714
C710 50V1
LCD Assembly
ST SK BK DK
BK
CH
MTL
LOUD
LOC/TPS
MONO /PRG
RADIO
TAPE
POWER
LED SWITCHIN
Q714, 715 YEANC
Q716 YEAN2SC2
Q717, 718 YEANC
D51
D52
D53
D54
D55
D56
D57
D58
D59
D60
D62
D63
D64
D65
D66
R50
R802 100K
R835 100K
R801 100K
R803 100K
R804 10
R805 100K
R806 3.9K
R807 100K
R808 100K
D801 MA165
D802 MA151KTW
SWITCHING
IC803 YEAMUPD4001C
D803 to 816
MA165
IC802
SEEK
ST
SD
F R
SK
A/B
TL
D801
D802
D803
D804
D805
D806
D807
D808
D809
D810
D811
D812
D813
D814
D815
D816
MU/ FF
MD/ REW
LOC/ TPS
MONO/ PRG
STOP/ EJ
BAND
LOUD
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SW11
SW12
SW13
SW14
SW15
C811 35V4.7
R820 1.5K
R819 1.5K
R818 470
R817 4.7K
R822 1.5K
Q802
C812 0.01
LOW PASS FILT
Q802 YEAN2SK
SWITCHING
IC802 YEAMUPD4001BG
R829 100K
CF801
C820 680P
X801
C805 220P
C804 220P
C801 0.01
C802 6V100
R809 100K
R810 100K
R780 10K
R781 5.6K
R782 5.6K
R330 1.5K
R332 15K
R333 3.9K
R233 3.9K
R234 27K
R334 27K
R317 1.5K
R718 1K
R822 1.5K
C330 50V1
C230 50V1
C811 35V4.7
C812 0.01
C813 0.01
C814 6V100
R751 2.2K
C751 0.1
C752 0.1
R752 82K
C753 50V1
R753 120K
Q751
C758 50V2.2
R762 390K
Q752
C759 10V47
R754 220
C754 0.0082
R755 150K
R756 56K
R757 6.8K
R758 100K
C755 0.1
C756 50V10
C757 50V1
R759 12K
R760 82K
C761 16V10
C762 16V10
R763 3.3K
R764 3.3K
C763 10V100
C765
C764 50V0.47
C766 50V0.33
C767 50V1
D751
X751
Q753
R761 100K
C760 10V47
C821 0.01
R767 2.2K
C768 10V100
R765 56
R766 150
C769 0.001
C770 0.001
C771 0.0022
R768 47K
R772 3.3K
C772 10V22
C773 0.068
C775 0.047
D752
R769 56K
R770 47K
SK
SSC
CONT
ARI
8V
R726 10K
R725 12K
R724 10K
R723 12K
R722 10K
R721 180
R728 39K
R719 390
R727 2.2K
R720 8.2K
C718 50V1
R796 100K
R797 100K
R798 100K
R799 100K
R800 100K
R802 100K
R835 100K
R801 100K
R803 100K
R804 10
R805 100K
R806 3.9K
R807 100K
R808 100K
R829 100K
R809 100K
R810 100K
R780 10K
R781 5.6K
R782 5.6K
R330 1.5K
R332 15K
R333 3.9K
R233 3.9K
R234 27K
R334 27K
R317 1.5K
R718 1K
R822 1.5K
C330 50V1
C230 50V1
C811 35V4.7
C812 0.01
C813 0.01
C814 6V100
R751 2.2K
C751 0.1
C752 0.1
R752 82K
C753 50V1
R753 120K
Q751
C758 50V2.2
R762 390K
Q752
C759 10V47
R754 220
C754 0.0082
R755 150K
R756 56K
R757 6.8K
R758 100K
C755 0.1
C756 50V10
C757 50V1
R759 12K
R760 82K
C761 16V10
C762 16V10
R763 3.3K
R764 3.3K
C763 10V100
C765
C764 50V0.47
C766 50V0.33
C767 50V1
D751
X751
Q753
R761 100K
C760 10V47
C821 0.01
R767 2.2K
C768 10V100
R765 56
R766 150
C769 0.001
C770 0.001
C771 0.0022
R768 47K
R772 3.3K
C772 10V22
C773 0.068
C775 0.047
D752
R769 56K
R770 47

(J)

SWITCHING
IC804 YEAMUPD4081C

VR233, 333 TONE CONTROL (BASS)
VR234, 334 TONE CONTROL (TRE)
VR231, 331 VOLUME CONTROL
VR232, 332 FADER CONTROL
VR235 BALANCE CONTROL

E-5146A

BASS/TRE AMP
IC316 AN6552S

AF AMP
Q221, 321 YEANC1623
Q222, 322 YEAN2SK336

MUTING
Q223, 323 2SD1030TW

AF POWER AMP
IC217, 317 YEAMLA4460

RIGHT SPEAKER (+)
RIGHT SPEAKER (–)
LEFT SPEAKER (+)
LEFT SPEAKER (–)

SWITCHING
Q320 2SD636RST

SWITCHING
Q220 YEANC1623

MUTING
Q804 YEAN2SC2785
Q805 YEANDTA144S

LOUDNESS SWITCHING
Q315 YEANDTC144S

SWITCHING
IC753 YEAMUPD4001C

AF AMP
IC218 AN6552

PRE AMP OUT

8PIN DIN CONNECTOR
1. Rch Output (+)
2. Lch Output (+)
3. Power Supply (Illumination)
4. Rch Output (–)
5. Lch Output (–)
6. Power Supply (14.4 V DC)
7. Power Supply (Relay)
8. Ground

SHIFT/STORE/BUS REGISTER
IC805, 806 YEAMUPD4094BC

LW/MW/FM SWITCHING
Q702, 703 YEAN2SA1175

SW801
SEEK SWITCH

VOLTAGE STABILIZER
IC701 YEAMNJM78L05

SWITCHING
15 YEANC1623
YEAN2SC2785
18 YEANC1623

D51, 62 to 65 LN0130C-QTA
D52 to 59 LN01801C
D60 YEADAA4524K
D66 LN01401C

FOOT SWITCH

FM SWITCHING
Q706 2SB643

FM SWITCHING
Q704 YEANDTC144S

VOLTAGE STABILIZER
Q701 2SC1383NC

MOTOR ANTENNA

D819 MA1068MH
D820, 821 MA1051LM

CE CONTROL
Q803
YEAN2SC2785
Q801 YEANC1623

MW SWITCHING
Q712 YEANDTC144S
Q711 YEAN2SA1175

LW SWITCHING
Q707 YEANDTA144S
Q708 YEANDTC144S

D706, 707
MA165

D710
YEADRD56JB3

VOLTAGE STABILIZER
Q709 YEAN2SD1020

SW701
POWER SWITCH

F :5A
POWER SUPPLY
(14.4 V DC)

F :1A
POWER SUPPLY
(Battery of Car)

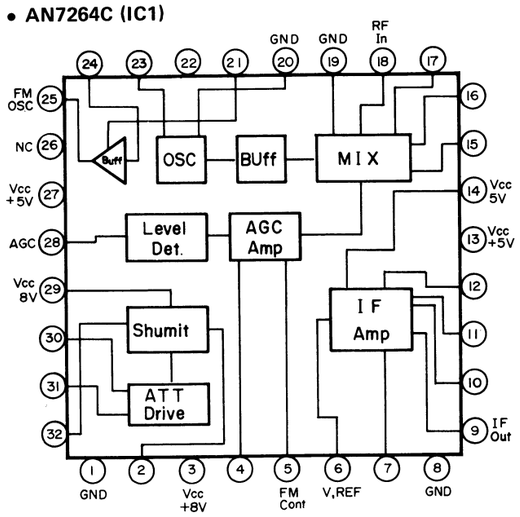
718	234	236	825	237	826	271	814	238	239	257	240	773	716	242	708	774	244	344	245	777	779	252	253	247	248	249	250	701	256	704		
	334	235		337	821	272		338	339	357	241			243	715	775	776	346	246	251	778	352	353	347	348	349	350	702	356			
	819	335	827	815		372		813	316	772	341			342		707	713	712	345			710		354	254	729	255	703				
	824	336	818	816		371			812		340			343							351	711		706		705	JII	355				R
230	231	233	815	232			235	318		238		236	336	237						249	319	239	240	242	243	244	245	246	248	707		
330	331	333	807	234			335	806		338				337						349		339	340	241	343	344	345	247	348			
	810	808		334										774								258	703	342	251	350	250	346	701			
				332																		704	706	341	351	702	705	347				C

CASSETTE CAR STEREO TAPE PLAYER w/LW/MW/UKW(FM) MPX ELECTRONIC TUNER RADIO

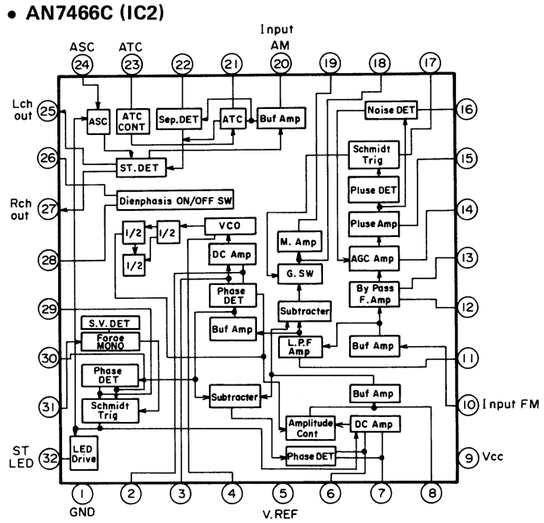
IC BLOCK DIAGRAM/IC BLOCK DIAGRAM

RADIO BLOCK

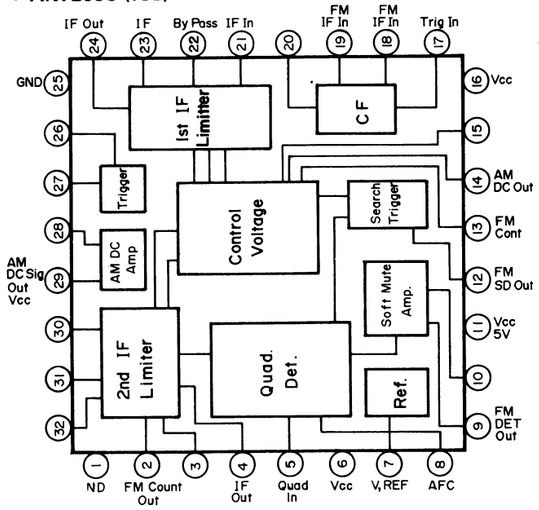
• AN7264C (IC1)



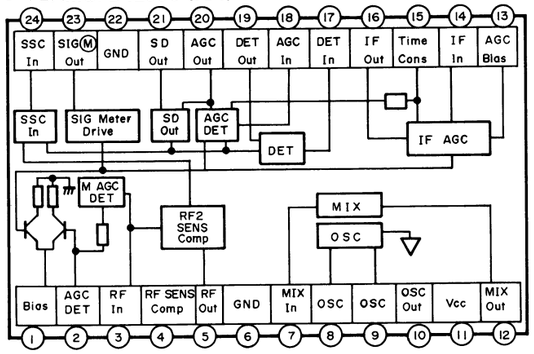
• AN7466C (IC2)



• AN7268C (IC3)

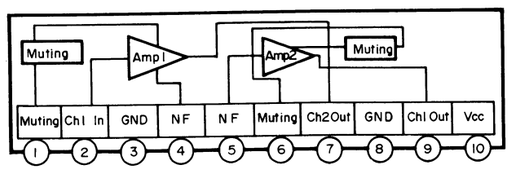


• YEAMUPD1296C (IC4)

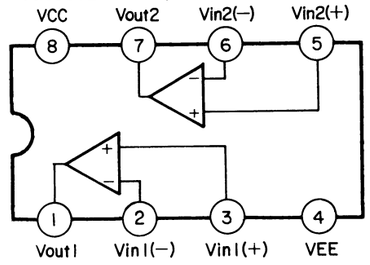


CONTROL, AUDIO BLOCK

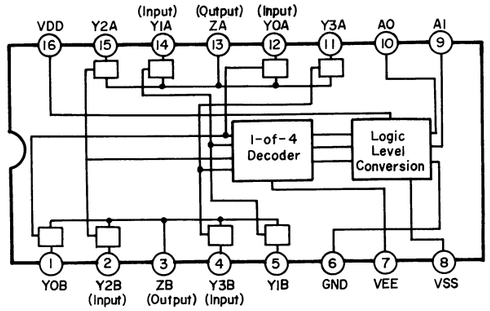
• YEAMLA4460 (IC217, 317)



• AN6552 (IC218, 316, 751)



• YEAMUPD4052C (IC216)

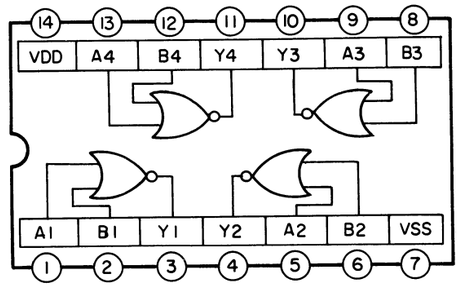


Control Input			"ON" Channel
INHIBIT	B	A	
L	L	L	Y0, X0
L	L	H	Y1, X1
L	H	L	Y2, X2
L	H	H	Y3, X3
H	X	X	NONE

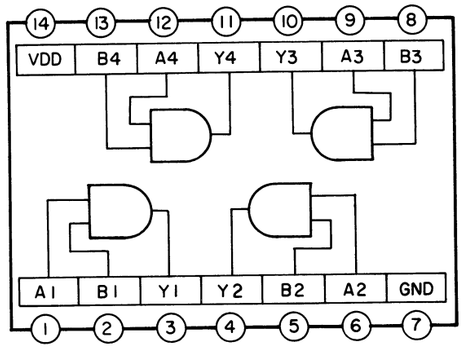
• Truth value table of YEAMUPD4052C

note: H = High Level
L = Low Level
X = H or L

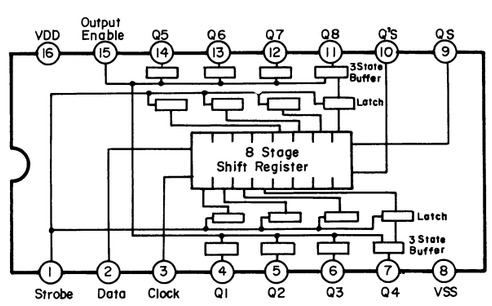
• YEAMUPD4001BG (IC802)
• YEAMUPD4001C (IC753, 803)



• YEAMUPD4081C (IC804)



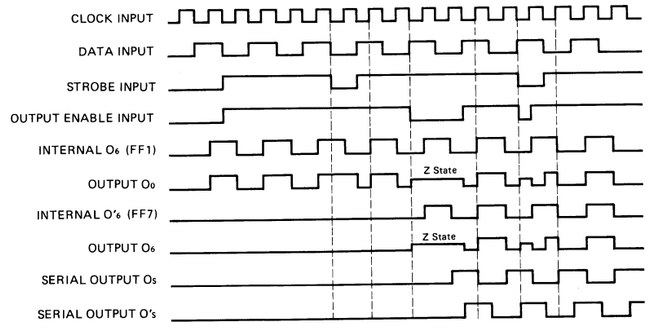
• YEAMUPD4094B (IC805)



CLOCK	OUTPUT ENABLE	STROBE	DATA	PARALLEL OUTPUT		SERIES OUTPUT	
				O_0	O_N	O_S	O'_S
↑	L	X	X	HIGH IMPEDARCE	HIGH IMPEDARCE	O'_6	NO CHANGE
↓	L	X	X	HIGH IMPEDARCE	HIGH IMPEDARCE	NO CHANGE	O_7
↑	H	L	X	NO CHANGE	NO CHANGE	O'_6	NO CHANGE
↑	H	H	L	L	O_{N-1}	O'_6	NO CHANGE
↑	H	H	H	H	O_{N-1}	O'_6	NO CHANGE
↓	H	H	H	NO CHANGE	NO CHANGE	NO CHANGE	O_7

• Truth value table of YEAMUPD4094B

note: H = High Level
L = Low Level
X = H or L

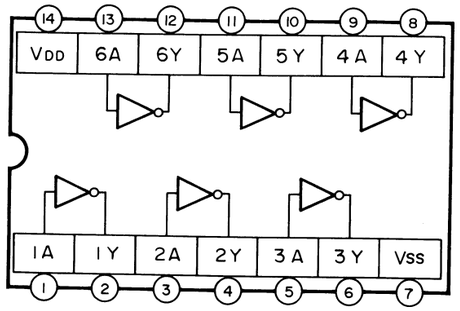


• Timing chart of YEAMUPD4094B

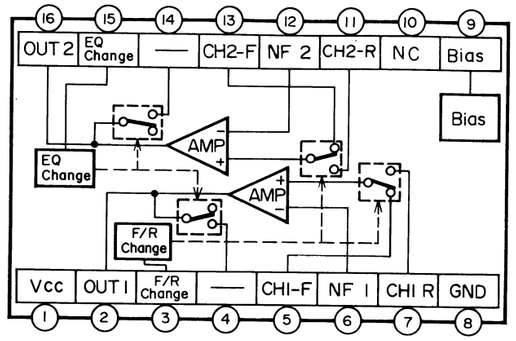
CQ-977EE/EG CQ-978EG

TAPE BLOCK

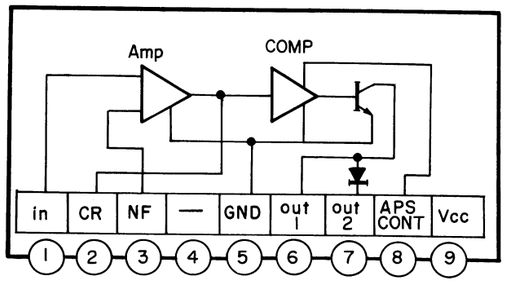
• **MN4069UBS (IC1)**



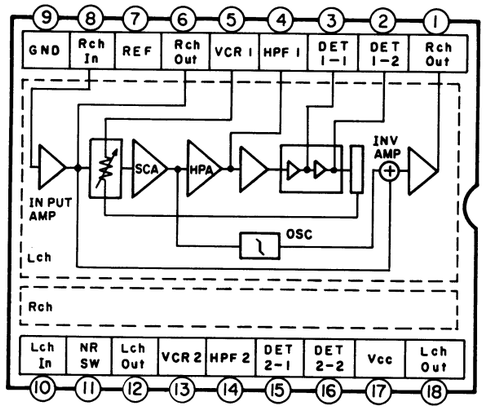
• **YETMTA7705F (IC51)**



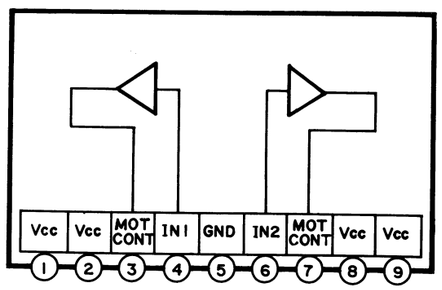
• **YEALA2000S (IC215)**



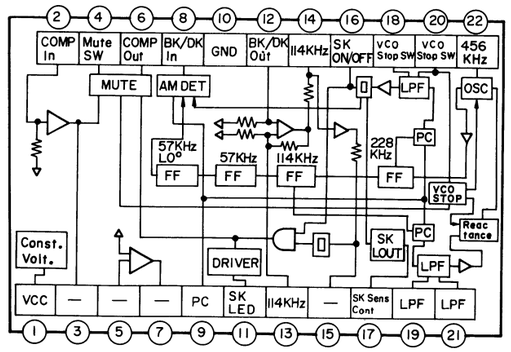
• **YEAMHA12047 (IC315)**



• **YEAMM54544L (IC652)**



• **YEAMLA2220 (IC752)**

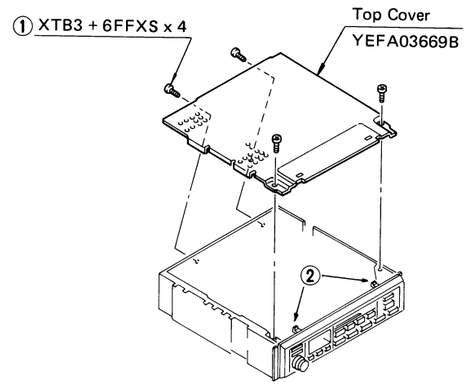


DISASSEMBLY INSTRUCTIONS/ANWEISUNGEN FÜR DER AUSBAV

COVER AND ESCUTCHEON ASS'Y REMOVAL

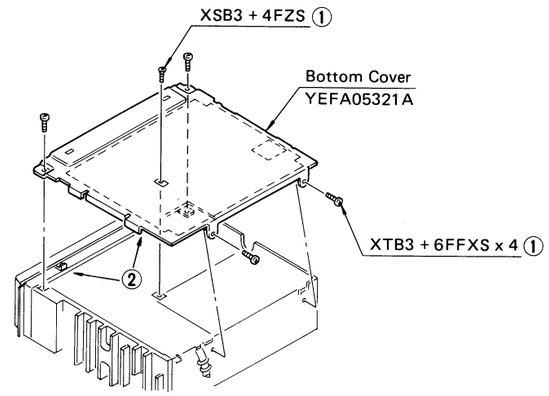
1. TOP COVER REMOVAL

① Removal the four screws.
② Take out the top cover by pushing two claws of the escutcheon.



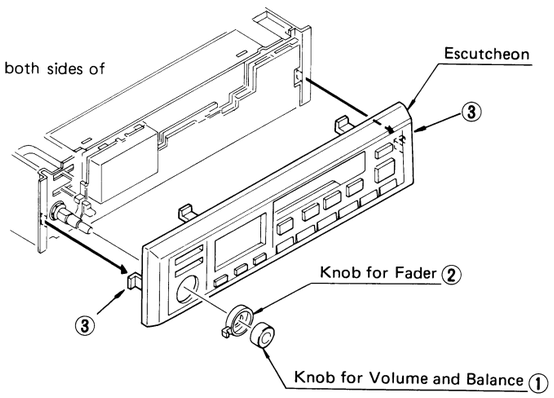
2. BOTTOM COVER REMOVAL

① Remove the five screws.
② Take out the bottom cover by pushing two claws of the escutcheon.



3. ESCUTCHEON ASS'Y REMOVAL

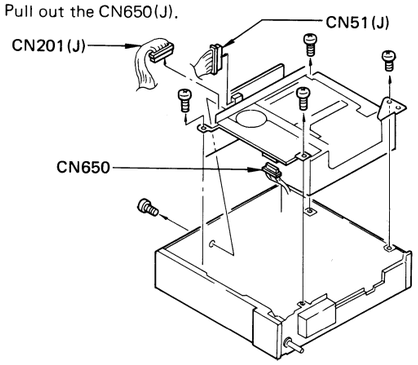
① Pull out the knob of volume and balance.
② Pull out the knob for fader.
③ Pull out the escutcheon by pushing two claws on both sides of the escutcheon.



DECK REMOVAL

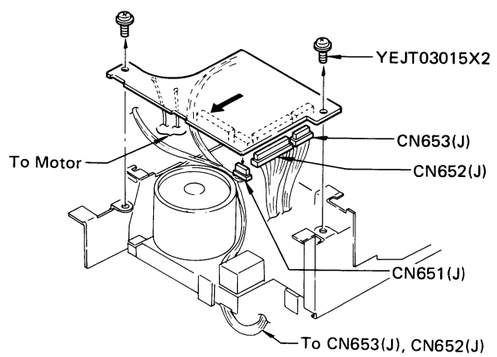
1. DECK ASS'Y REMOVAL

- Pull out the CN201(J), CN51(J).
- It can be removed after removing five screws and lifting the deck part.
- Pull out the CN650(J).

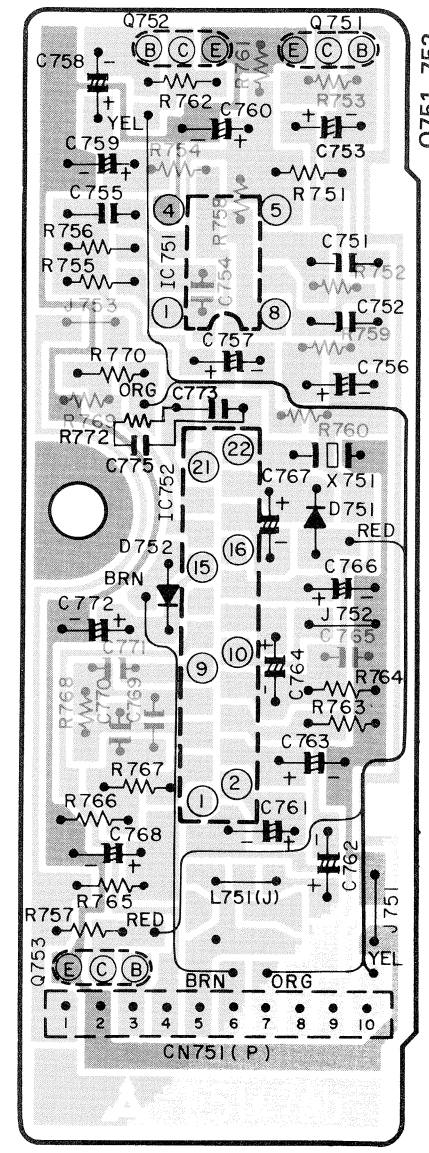


2. REMOVE THE P.C.B. (E-5147Ac)

- Pull out the CN651(J), CN652(J) and CN653(J).



WIRING DIAGRAM MODEL CQ-978EG(CONTROL AND AUDIO BLOCK)



Q751	
B	0.6V
C	0.1V
E	0V

Q752	
B	0.6V
C	1.6V
E	0V

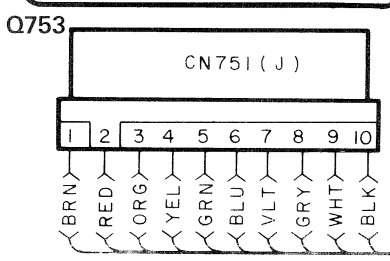
IC751	
1	4.0V
2	4.0V
3	4.0V
4	0V
5	4.0V
6	4.0V
7	4.0V
8	8.0V

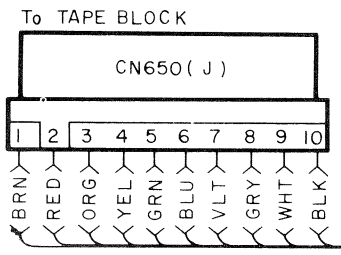
IC752	
1	6.8V
2	2.0V
3	2.0V
4	4.1V
5	2.0V
6	1.5V
7	2.0V
8	1.6V
9	2.8V
10	0V
11	5.3V
12	2.7V
13	2.7V
14	2.7V
15	0.7V
16	3.1V
17	1.7V
18	2.8V
19	2.8V
20	2.8V
21	2.8V
22	3.7V

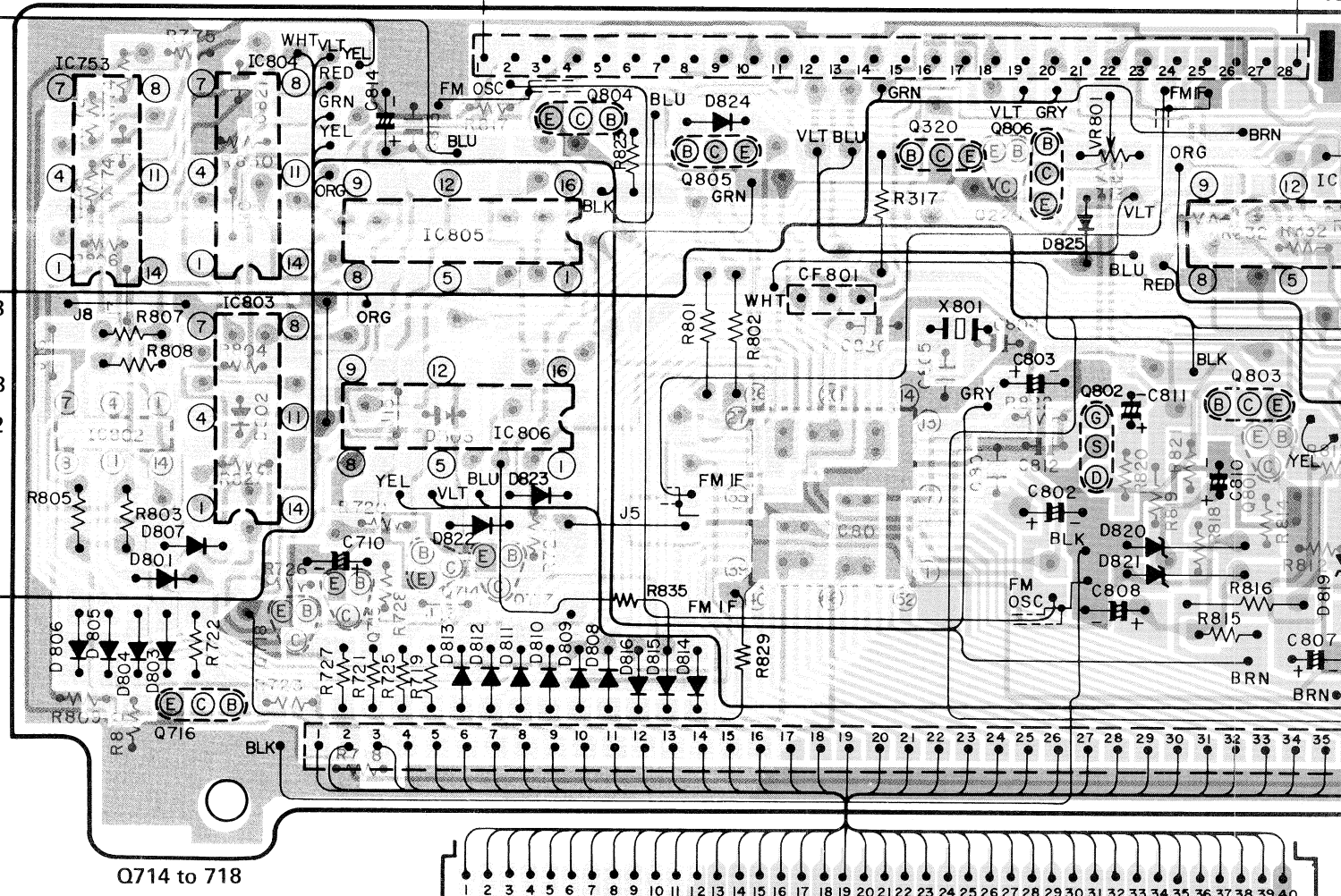
Q753	
B	5.0V
C	0V
E	0V

RADIO BLOCK
E-5148A

Refer to the page 27 about this part.



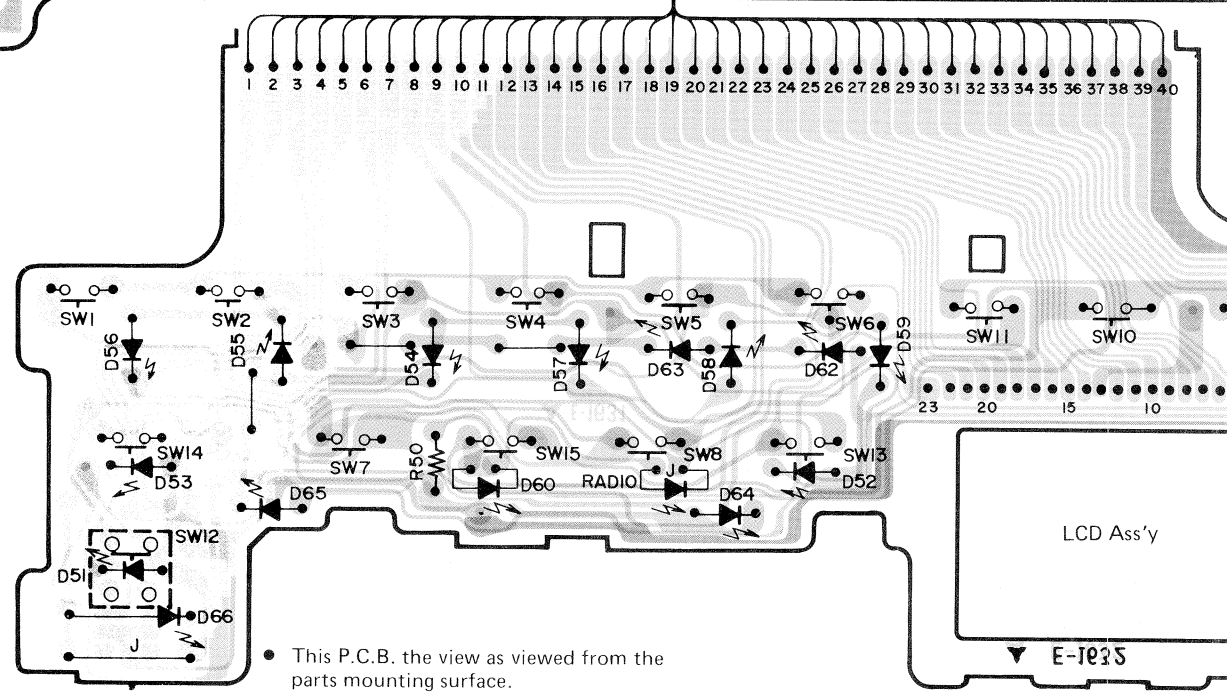




IC753		IC803		IC804	
1	4.0V	1	4.0V	1	0.9V
2	5.0V	2	5.0V	2	0.9V
3	0V	3	0V	3	0V
4	0V	4	0V	4	0V
5	5.0V	5	4.0V	5	0V
6	0V	6	5.0V	6	0V
7	0V	7	0V	7	0V
8	0V	8	1.6V	8	0.9V
9	5.0V	9	1.6V	9	0V
10	0V	10	4.0V	10	0V
11	5.0V	11	4.0V	11	0V
12	0V	12	1.0V	12	0.9V
13	0V	13	1.0V	13	0.9V
14	5.0V	14	5.0V	14	5.0V

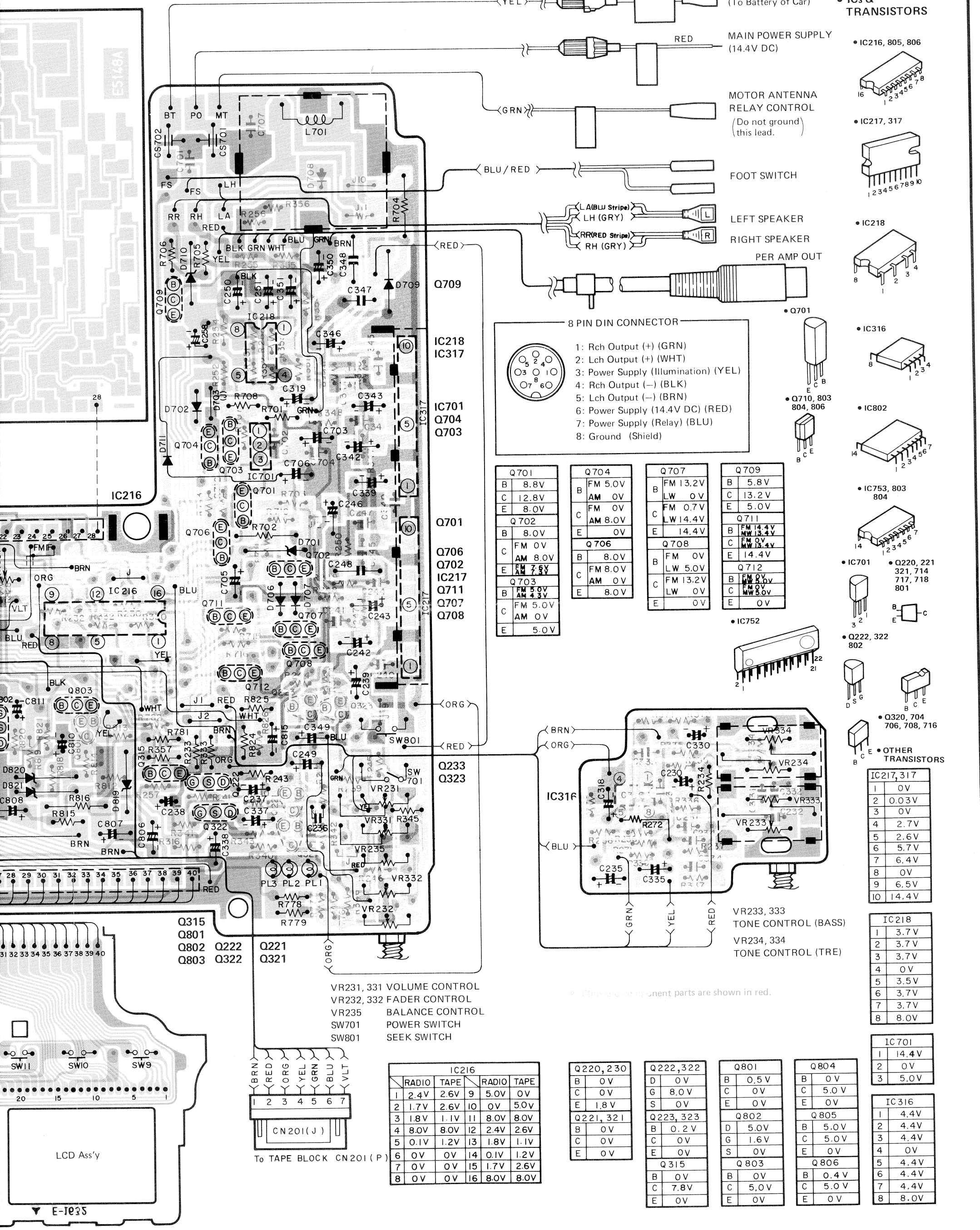
IC802				Q714		Q716		Q718	
1	5.0V	8	4.0V	B	0.6V	B	0V	B	0V
2	4.0V	9	5.0V	C	9.5V	C	12V	C	12V
3	0V	10	0V	E	0V	E	0V	E	0V
4	0V	11	0V	Q715		Q717			
5	4.0V	12	5.0V	B	0.6V	B	0V		
6	5.0V	13	4.0V	C	0.7V	C	12V		
7	0V	14	5.0V	E	0V	E	0V		

Q714 to 718



SW1 PRESET F/ SWITCH
SW2 PRESET E SWITCH
SW3 PRESET D SWITCH
SW4 PRESET C SWITCH
SW5 PRESET B/ DOLBY B SWITCH
SW6 PRESET A/ METAL SWITCH
SW7 MU/FF SWITCH
SW8 MD/REW SWITCH
SW9 DK SWITCH
SW10 BK SWITCH
SW11 BAND SWITCH
SW12 LOUD SWITCH
SW13 LOC/TPS SWITCH
SW14 MONO/PRG SWITCH
SW15 STOP/EJ SWITCH

● This P.C.B. the view as viewed from the parts mounting surface.



Q701	
B	8.8V
C	12.8V
E	8.0V

Q702	
B	8.0V
C	FM 0V AM 8.0V
E	FM 7.6V AM 7.3V

Q703	
B	FM 5.0V AM 4.3V
C	FM 5.0V AM 0V
E	5.0V

Q704	
B	FM 5.0V AM 0V
C	FM 0V AM 8.0V
E	0V

Q706	
B	8.0V
C	FM 8.0V AM 0V
E	8.0V

Q707	
B	FM 13.2V LW 0V
C	FM 0.7V LW 14.4V
E	14.4V

Q708	
B	FM 0V LW 5.0V
C	FM 13.2V LW 0V
E	0V

Q709	
B	5.8V
C	13.2V
E	5.0V

Q711	
B	FM 14.4V MW 13.4V
C	FM 0V MW 13.4V
E	14.4V

Q712	
B	FM 0V MW 5.0V
C	FM 0V MW 5.0V
E	0V

IC216					
	RADIO	TAPE		RADIO	TAPE
1	2.4V	2.6V	9	5.0V	0V
2	1.7V	2.6V	10	0V	5.0V
3	1.8V	1.1V	11	8.0V	8.0V
4	8.0V	8.0V	12	2.4V	2.6V
5	0.1V	1.2V	13	1.8V	1.1V
6	0V	0V	14	0.1V	1.2V
7	0V	0V	15	1.7V	2.6V
8	0V	0V	16	8.0V	8.0V

Q220, 230	
B	0V
C	0V
E	1.8V

Q221, 321	
B	0V
C	0V
E	0V

Q222, 322	
D	0V
G	8.0V
S	0V

Q223, 323	
B	0.2V
C	0V
E	0V

Q315	
B	0V
C	7.8V
E	0V

Q801	
B	0.5V
C	0V
E	0V

Q802	
D	5.0V
G	1.6V
S	0V

Q803	
B	0V
C	5.0V
E	0V

Q804	
B	0V
C	5.0V
E	0V

Q805	
B	5.0V
C	5.0V
E	0V

Q806	
B	0.4V
C	5.0V
E	0V

IC217, 317	
1	0V
2	0.03V
3	0V
4	2.7V
5	2.6V
6	5.7V
7	6.4V
8	0V
9	6.5V
10	14.4V

IC218	
1	3.7V
2	3.7V
3	3.7V
4	0V
5	3.5V
6	3.7V
7	3.7V
8	8.0V

IC701	
1	14.4V
2	0V
3	5.0V

IC316	
1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.0V

• ICs & TRANSISTORS

• IC216, 805, 806

• IC217, 317

• IC218

• Q701

• IC316

• Q710, 803 804, 806

• IC802

• IC753, 803 804

• IC701

• Q220, 221 321, 714 717, 718 801

• IC752

• Q222, 322 802

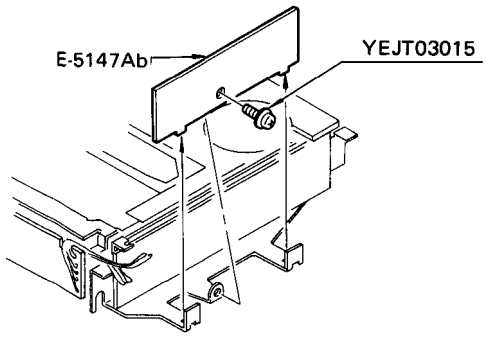
• Q320, 704 706, 708, 716

• OTHER TRANSISTORS

CASSETTE CAR STEREO TAPE PLAYER w/LW/MW/UKW(FM) MPX ELECTRONIC TUNER RADIO

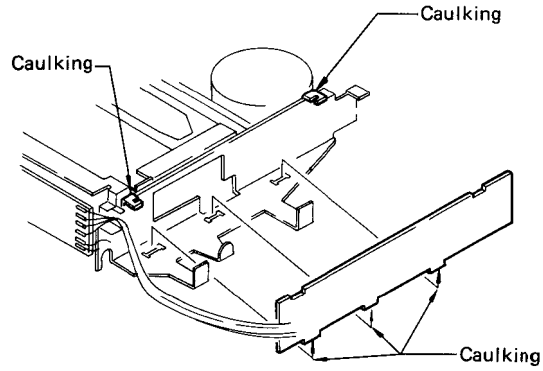
3. REMOVE THE P.C.B. (E-5147Ab)

- Remove the one screw.



4. REMOVE THE P.C.B. (E-5147Aa)

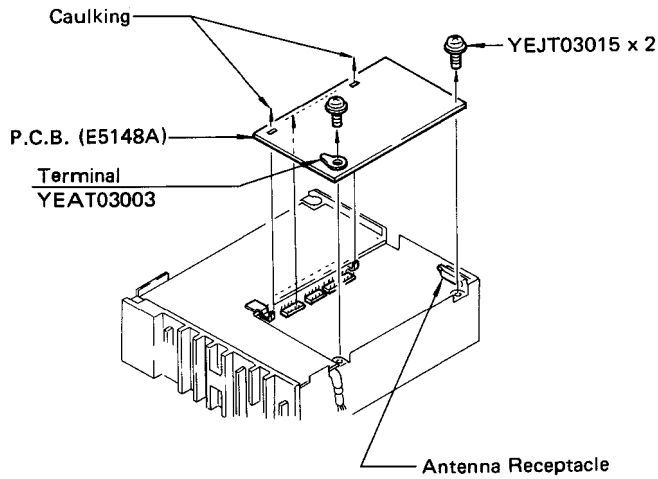
- Remove the five caulkings.



RADIO CONTROL AND AUDIO PART REMOVAL

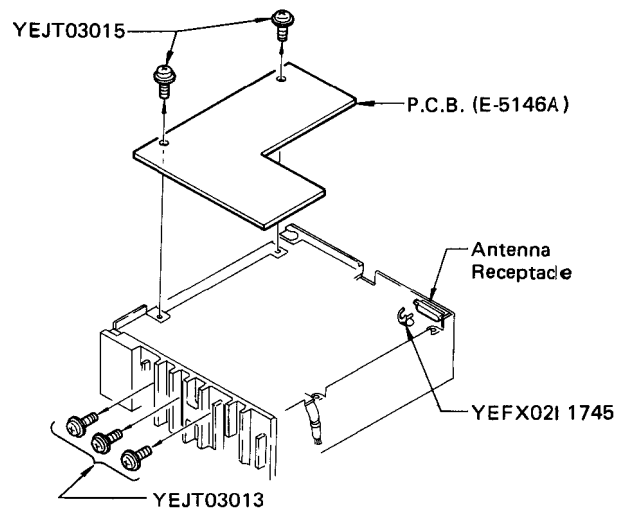
1. REMOVE THE RADIO P.C.B. (E-5148A)

- Remove the solder of P.C.B. (E-5148A).



2. REMOVE THE CONTROL AND AUDIO P.C.B. (E-5146A)

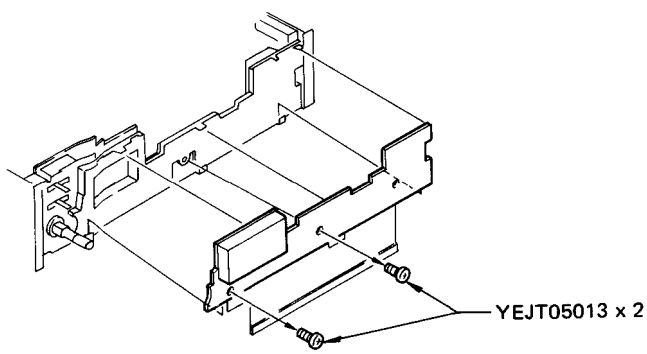
- Remove two screws of the P.C.B. (E-5147A).
- Remove the three screws of the heat sink.



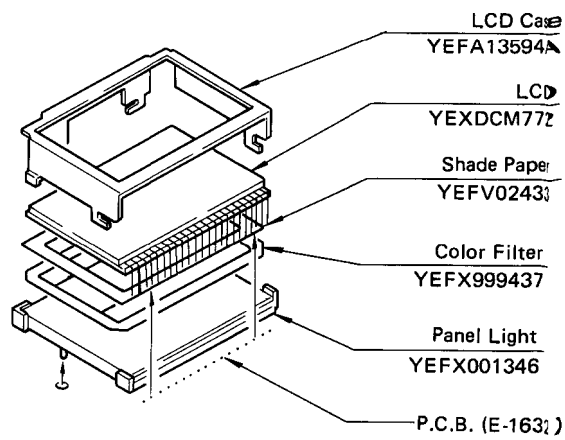
KEYBOARD P.C.B. REMOVAL

1. REMOVE THE KEY BOARD ASS'Y (E-1631, E-1632)

- Remove the solder of flexible P.C.B. (E-1631) from P.C.B. (E-5146A)
- Remove the three screws.

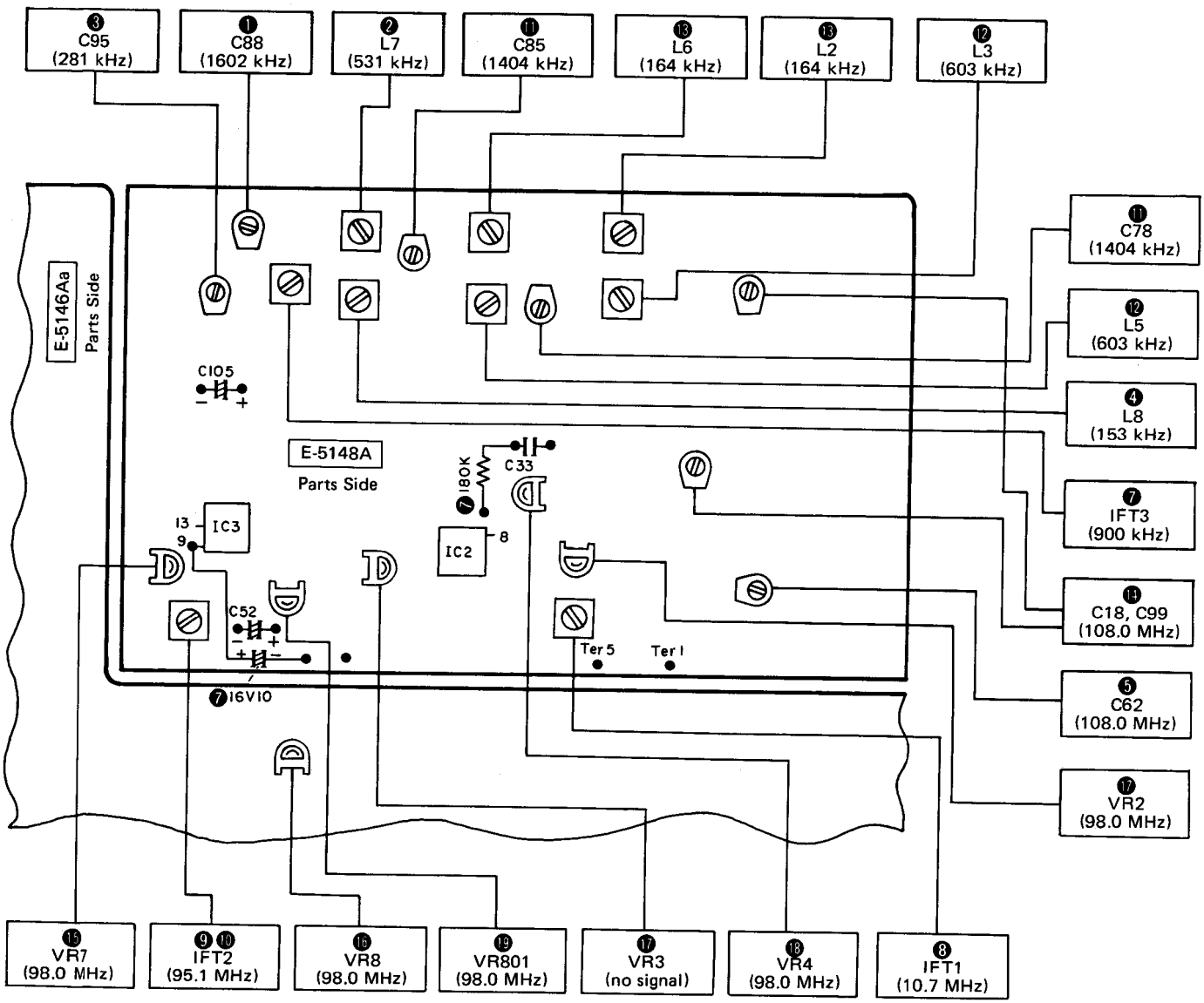


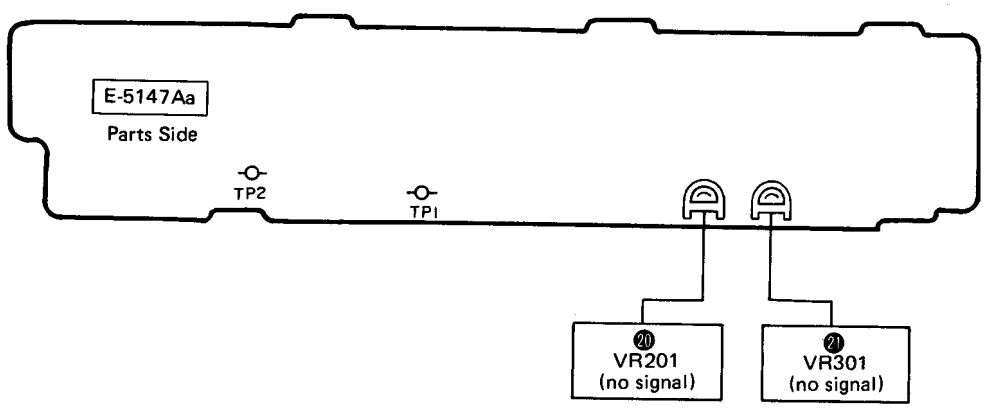
2. ASSEMBLE OF LCD



ALIGNMENT POINTS/ABGLICHPUNKTE

(CQ-977EE/EG, CQ-978EG)





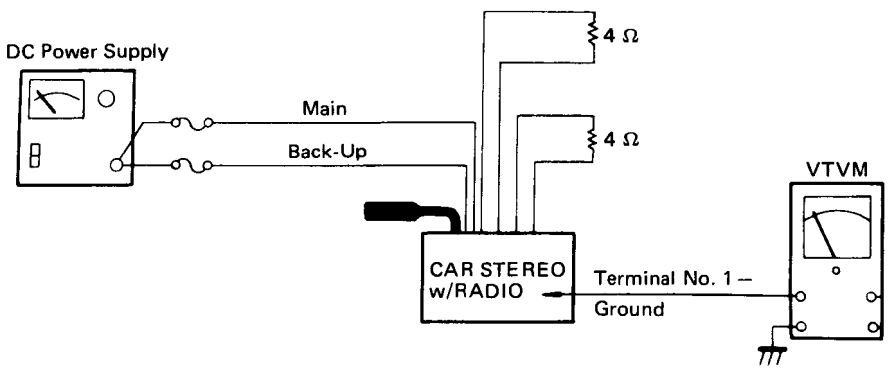
ALIGNMENT INSTRUCTIONS

(CQ-977EE/EG, CQ-978EG)

- Power supply voltage: DC 14.4 V
- Output impedance: 4 Ω
- Output power: 0.5 W
- Balance control: Center
- Volume control: Set for 0.5 W output
- Fader control: Center
- Tone control (Bass/Tre): Center
- Loudness switch: OFF
- Dolby NR: OFF

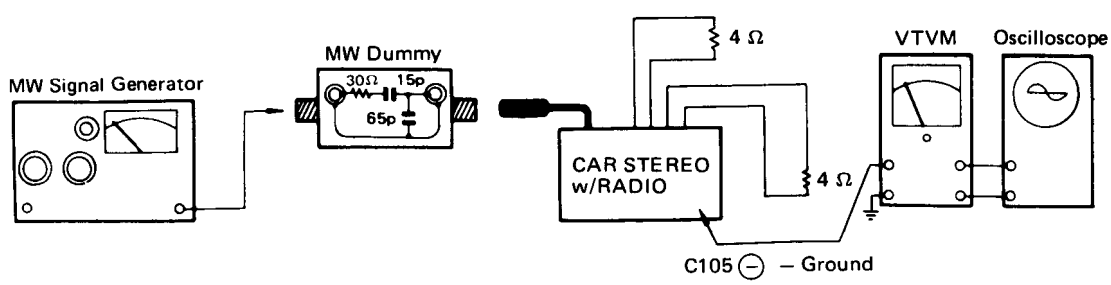
1. VARACTOR VOLTAGE ALIGNMENT

Step	Alignment Item	Band Selector	VTVM Connection	Display	Adjust	Remarks
1	MW VARACTOR VOLTAGE	MW	Terminal No. 1 (E5148A) – Ground	1602 kHz	C88	• Adjust for 9.0 V.
2				531 kHz	L7	• Adjust for 1.0 V. • Repeat steps 2 & 3 times, and finish at C88.
3	LW VARACTOR VOLTAGE	LW		281 kHz	C95	• Adjust for 5.0 V.
4				153 kHz	L8	• Adjust for 1V. • Repeat steps 2 & 3 times, and finish at C95.
5	FM VARACTOR VOLTAGE	FM		108.0 MHz	C62	• Adjust for 8.0 V.
6				87.5 MHz	—	• It is 0.7 V ~ 1.0 V.



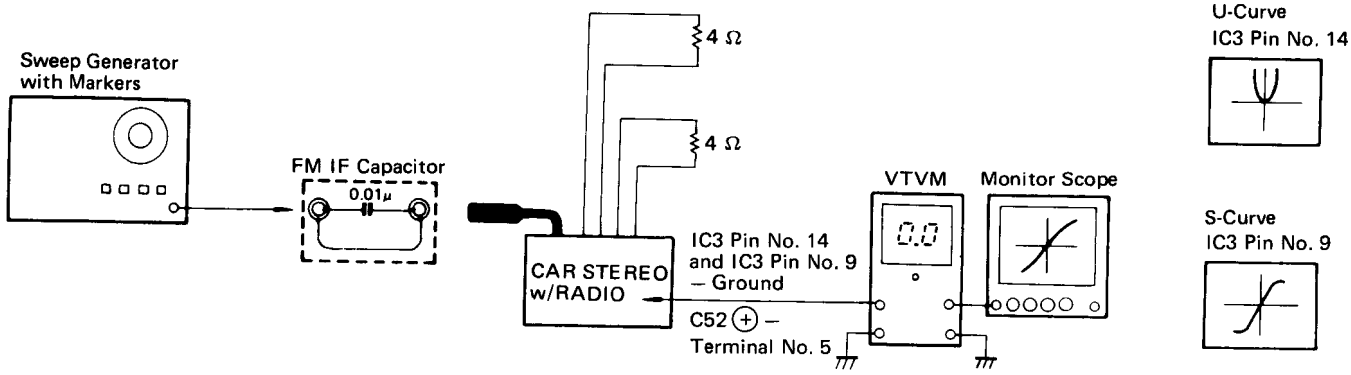
2. MW/LW IF ALIGNMENTE

Step	Align-ment Item	Band Selector	Signal Generator	Input Terminal	VTVM Connection	Frequency Display (Radio)	Adjust	Remarks
7	MW-IF LW-IF	MW LW	450 kHz [400 Hz Mod.]	Antenna receptacle	C105⊖ – Ground	900 kHz	IFT3	• Adjust for maximu m.



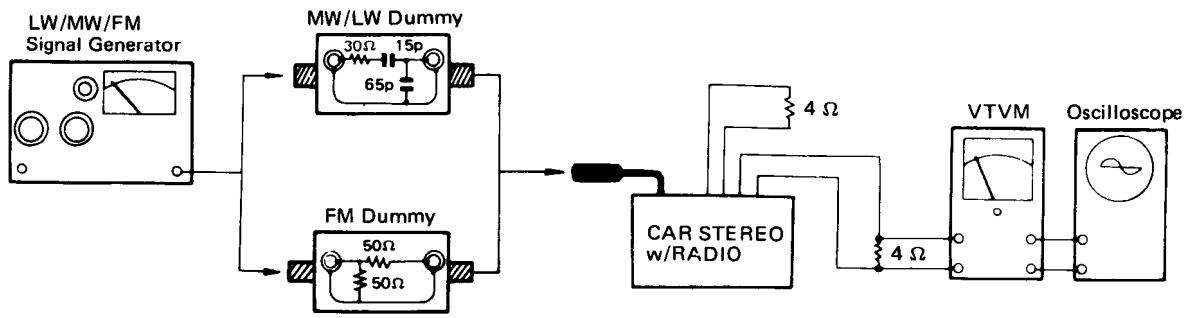
3. FM-IF ALIGNMENT

Step	Alignment Item	Band Selector	Signal Generator	Input Terminal	Monitor Scope Connection	Display	Adjust	Remarks
8	FM-IF	FM	10.7 MHz	Antenna receptacle	IC3 Pin No. 14 – Ground	95.1 MHz	IFT1	• Adjust for maximum amplitude and symmetrical curve.
9					IC3 Pin No. 9 – Ground		IFT2	• Adjust for maximum amplitude and proper linearity between about ±100 kHz markers.
10			98.0 MHz 54 dB/μV		C52⊕ – Terminal No. 5	98.0 MHz	IFT2	• Potential difference is 0 V.



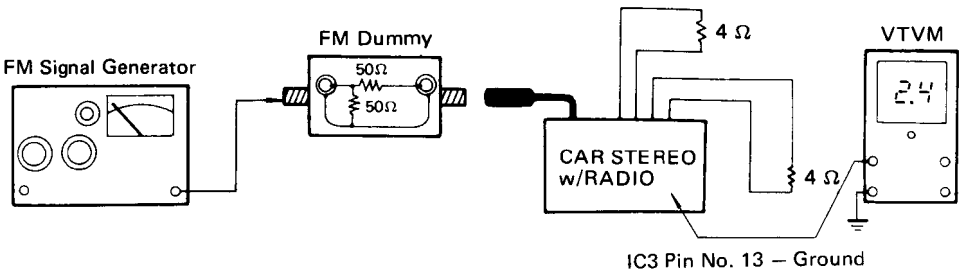
4. MW/LW/FM RF ALIGNMENT

Step	Alignment Item	Band Selector	Signal Generator	Input Terminal	VTVM Connection	Display	Adjust	Remarks
11	MW-RF	MW	1404 kHz [400 Hz Mod.]	Antenna receptacle	Speaker Terminals	1404 kHz	C78 C85	• Adjust for maximum. • Repeat steps 2 & 3 times, and finish at low frequency of each alignment item.
12			603 kHz [400 Hz Mod.]			603 kHz	L3 L5	
13	LW-RF	LW	164 kHz [400 Hz Mod.]			164 kHz	L2 L6	
14	FM-RF	FM	108.0 MHz [400 Hz Mod.]			108.0 MHz	C18 C99	



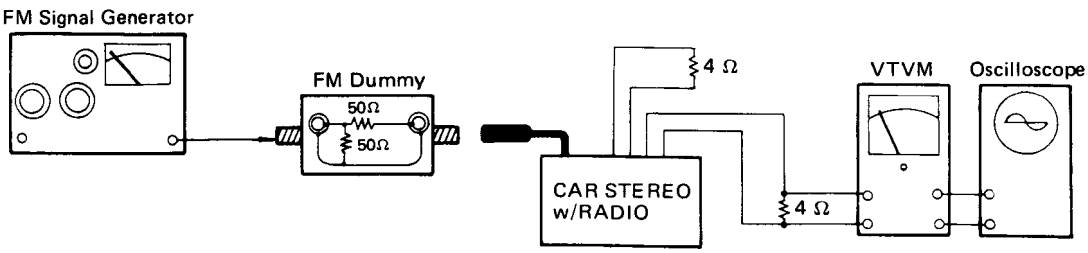
5. FM CONTROL VOLTAGE ALIGNMENT

Step	Alignment Item	Band Selector	Signal Generator	Input Terminal	VTVM Connection	Frequency Display (Radio)	Adjust	Remarks
15	FM CONTROL VOLTAGE	FM	98.0 MHz 24 dB/μV	Antenna receptacle	IC3 Pin No. 13 – Ground	98.0 MHz	VR7	• Adjust for 2.4 V.



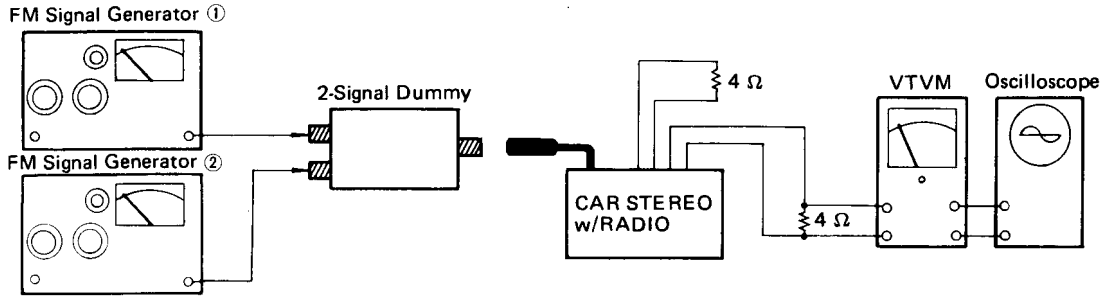
6. FM MUTING ALIGNMENT

Step	Alignment Item	Band Selector	Signal Generator	Input Terminal	VTVM Connection	Display	Adjust	Remarks
16	FM MUTING	FM	98.0 MHz 54 dB [400 Hz Mod.]	Antenna receptacle	Speaker Terminals	98.0 MHz	VR8	• Attenuate signal generator output to 0 dB. • Signal generator output to –20 dB. • Then –25 dB output at VR8.



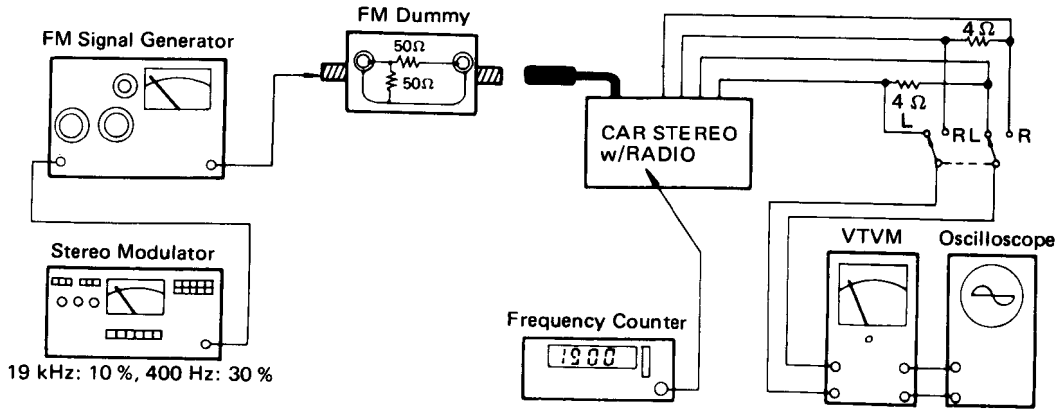
7. FM AGC ALIGNMENT

Step	Alignment Item	Band Selector	Signal Generator	Input Terminal	VTVM Connection	Display	Adjust	Remarks
17	FM AGC	FM	FM SG-1 98.0 MHz, 60 dB [400 Hz Mod.] FM SG-2 98.5 MHz, 100 dB [non-Mod.]	Antenna receptacle	Speaker Terminals	98.0 MHz	VR2	• Set volume control for 0.5 W output. • Attenuate signal generator output to 35 dB (μV) and adjust for –3 dB down output.



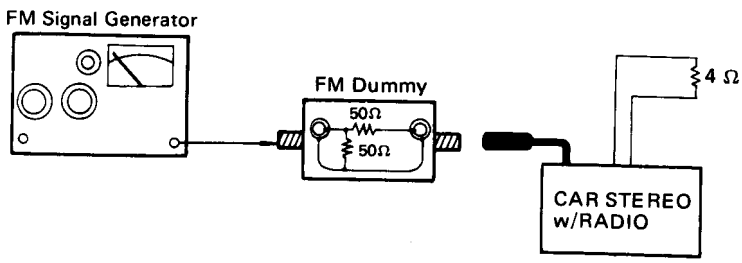
8. FM MULTIPLEX ALIGNMENT

Step	Alignment Item	Band Selector	Signal Generator	Input Terminal	VTVM Connection	Display	Adjust	Remarks
17	FM MPX	FM	no signal	——	Frequency Counter IC2 Pin No. 8 – Ground (19 kHz)	——	VR3	• Connect a 10μ16V between IC3 Pin No. 9 and ground, connect a 180 kΩ between IC3 Pin No. 7 and ground. • Adjust for 19 kHz±30 Hz.
18			98.0 MHz 74 dB [400 Hz Mod.]	Antenna receptacle	Speaker Terminals	98.0 MHz	VR4	• Take off 10μ16V and 180 kΩ. • Adjust for maximum separation.



9. FM SEARCH SENSITIVITY ALIGNMENT

Step	Alignment Item	Band Selector	Signal Generator	Input Terminal	VTVM Connection	Display	Adjust	Remarks
19	FM SEARCH SENS.	FM	98.0 MHz 20 dB [400 Hz Mod.]	Antenna receptacle	——	98.0 MHz	VR801	• Adjust to stop search tuning 20 dB input. • DX use.



10. DOLBY NR ALIGNMENT

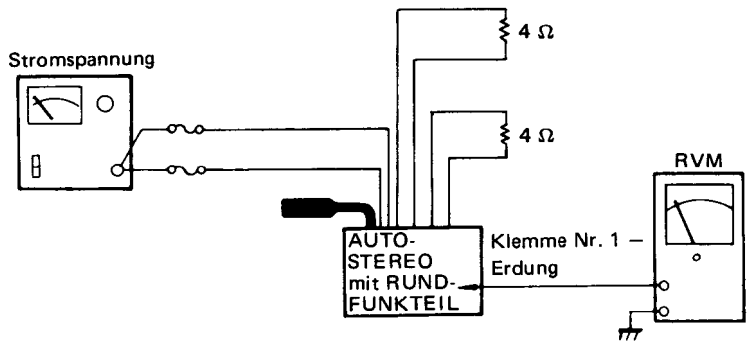
Step	Alignment Item	Test Tape	VTVM Connection	Adjust	Remarks
20	DOLBY NR	TCC-130	TP1 – Ground	VR201	• Adjust for 300 mV (±0.5 dB).
21		TCC-130	TP2 – Ground	VR301	• Adjust for 300 mV (±0.5 dB).

ABGLEICH-ANLEITUNG

- Stromspannung: DC 14,4 V
- Ausgangsimpedanz: 4 Ω
- Ausgangsleistung: 0,5 W
- Balanceregler: Mitte
- Lautstärkeregler: Auf 0.5 W ein tellen
- Ausblendregler: Mitte
- Klangregler (Höen/Tiefen): Mitte
- Loudness-Schalter: Aus
- Dolby NR-Schalter: Aus

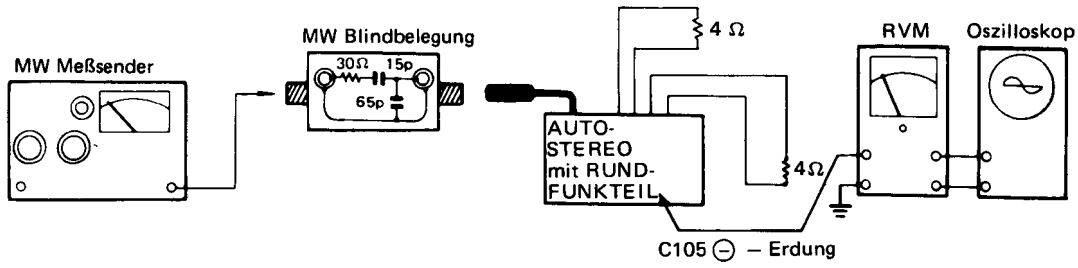
1. VARACTOR-ABGLEICH

Stufe	Abgleichobjekt	Stellung des Wellenbereich-umschalters	Anchluß des Anzeigeinstruments	Anzeige	Abgleich	Anmerkung
1	MW VARACTOR SPANNUNG	MW	Klemme Nr. 1 – Erdung	1602 kHz	C88	• Auf 9,0 V stellen.
2				531 kHz	L7	• Auf 1,0 V stellen. • Die Schritte 2 - 3 mal wiederholen und bei C88 aufhören.
3	LW VARACTOR SPANNUNG	LW		281 kHz	C95	• Auf 5,0 V stellen.
4				153 kHz	L8	• Auf 1,0 V stellen. • Die Schritte 2 - 3 mal wiederholen und bei C95 aufhören.
5	UKW VARACTOR SPANNUNG	UKW		108,0 MHz	C62	• Auf 8,0 V stellen.
6				87,5 MHz	—	• Es ist 0,7 V ~ 1,0 V.



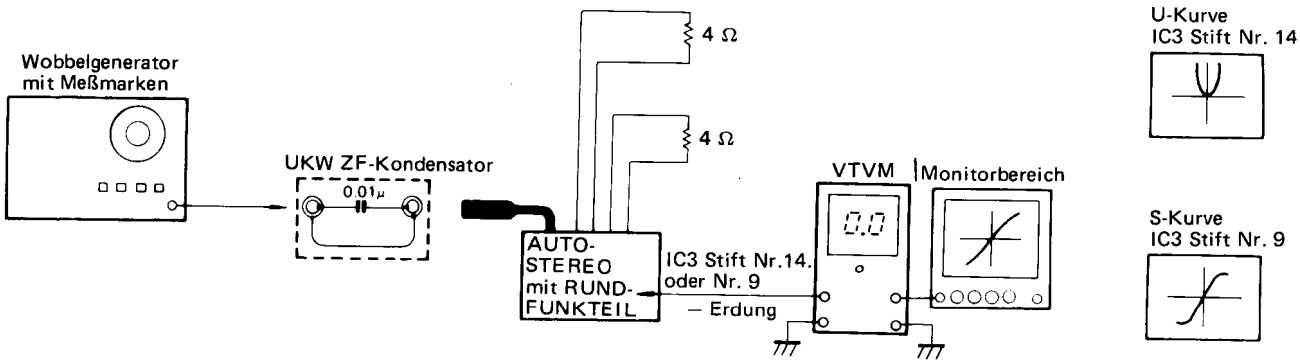
2. ABGLEICH VON MW/LW-ZF

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Anzeige-instruments	Anzeige	Abgleich	Ammerkung
7	MW-ZF LW-ZF	MW LW	450 kHz [400 Hz Mod.]	Antennen-steckdose	C105⊖ – Erdung	900 kHz	IFT3	• Auf maximum stellen.



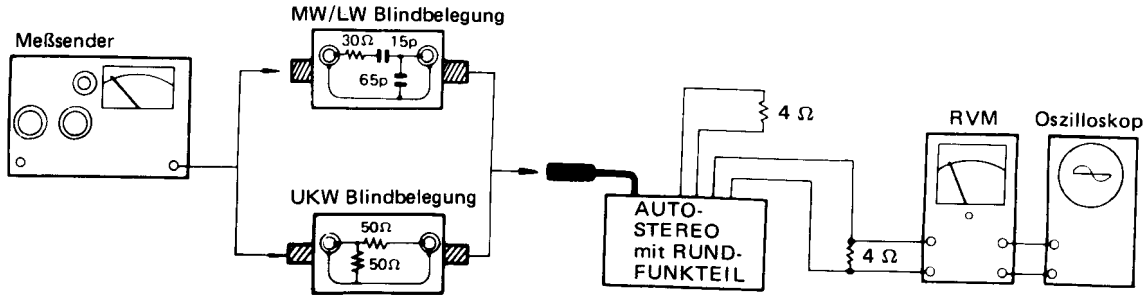
3. ABGLEICH VON UKW-ZF

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Monitor-bereich	Anzeige	Abgleich	Ammerkung
8	UKW ZF	UKW	10,7 MHz	Antennen-steckdose	IC3 Stift Nr. 14 – Erdung	95,1 MHz	IFT1	• Auf maximale amplitude und symmetrische Kurve einstellen.
9					IC3 Stift Nr. 9 – Erdung		IFT2	• Auf maximale Amplitude korrekte Linearität zwischen ±100 kH einstellen.
10			98,0 MHz 54 dB/μV		C52 ⊕ – Klemme Nr. 5	98,0 MHz	IFT2	• Potentialunterschied ist 0V.



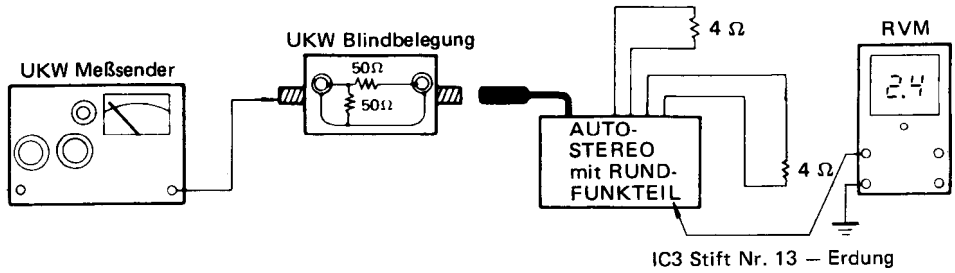
4. ABGLEICH VON MW/LW/UKW-HF

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Anzeige-instruments	Anzeige	Abgleich	Ammerkung
11	MW-HF	MW	1404 kHz [400 Hz Mod.]	Antennen-steckdose	Lautsprecher-anschlüsse	1404 kHz	C78 C85	• Auf maximum stellen. • Die Schritte 2 - 3 mal wiederholen und bei der hohen Frequenz für jeden Ableichpunkt aufhören.
12			603 kHz [400 Hz Mod.]			603 kHz	L3 L5	
13	LW-HF	LW	164 kHz [400 Hz Mod.]			164 kHz	L2 L6	
14	UKW-HF	UKW	108,0 MHz [400 Hz Mod.]			108,0 MHz	C18 C99	



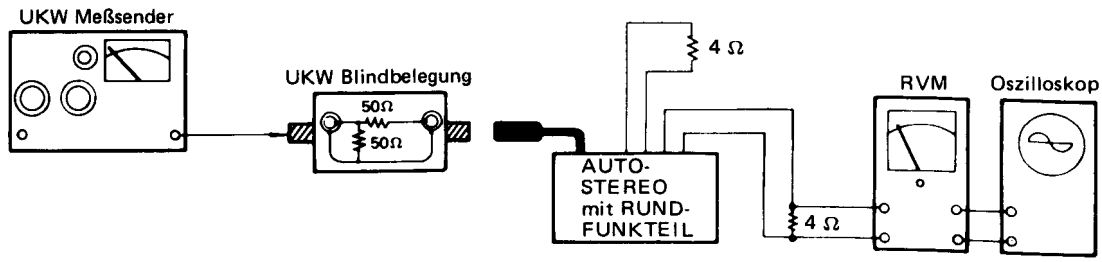
5. UKW STEUERSPANNUNGß-ABGLEICH

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Anzeige-instruments	Anzeige	Abgleich	Ammerkung
15	UKW STEUER-SPANNUNGß	UKW	98,0 MHz 24 dB/μV	Antennen-Steckdose	IC3 Stift Nr. 13 – Erdung	98,0 MHz	VR7	• Auf 2,4 V stellen.



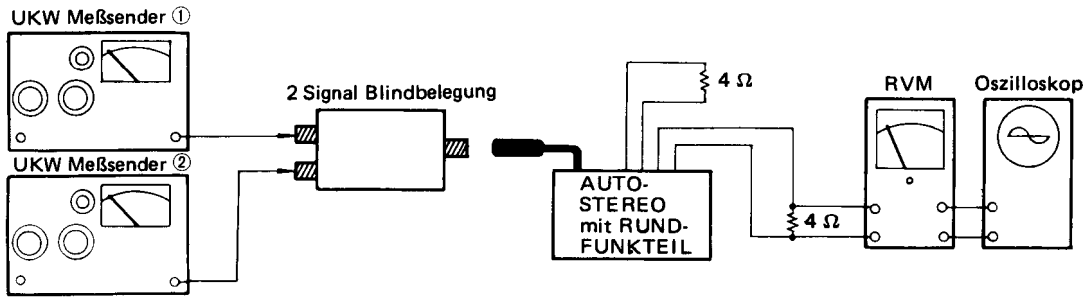
6. UKW STUMM ABGLEICH

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Monitor-bereich	Anzeige	Abgleich	Ammerkung
16	UKW STUMM	UKW	98,0 MHz 54 dB [400 Hz Mod.]	Antennen-Steckdose	Lautsprecher anschlüsse	98,0 MHz	VR8	• Dämpfungs Signal generator Ausgang an 0 dB. • Signal generator Ausgang an –20dB. • Dann –25dB an VR8.



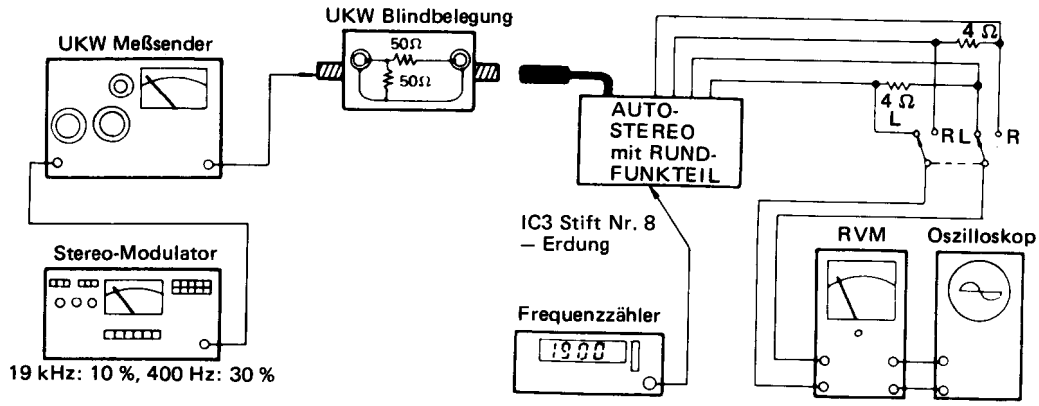
7. ABGLEICH VON UKW AGC

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Anzeige-instruments	Anzeige	Abgleich	Ammerkung
17	UKW AGC	UKW	UKW-Meß-1 98,0 MHz 60 dB [400 Hz Mod.] UKW-Meß-2 98,5 MHz 100 dB [ohne Mod.]	Antennen-steckdose	Lautsprecher-anschlüsse	98,0 MHz	VR2	• Den Lautstärke-reglet auf 0,5 W einstellen. • Das Signal um 35 dB auf –3 dB däampfen.



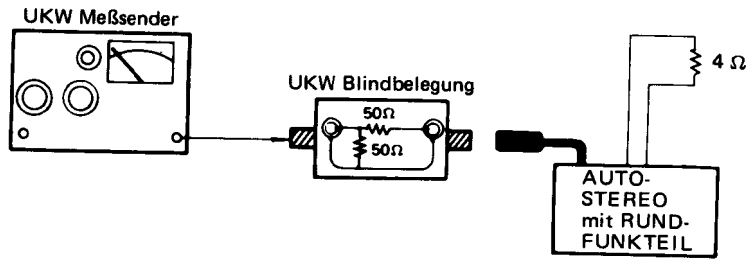
8. ABGLEICH VON UKW-MULTIPLEX

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Anzeige-instruments	Anzeige	Abgleich	Ammerkung
17	UKW MPX	UKW	ohne signal	——	Frequenz Zähler IC2 Stift Nr. 8 – Erdung (19 kHz)	——	VR3	• 10μ16V Zwischen IC Pol Nr. 7 und Erde anschlie en. • 180 kΩ Zwischen IC Pol Nr. 7 und Erde anschlie en. • Auf 19 kHz ±30 kHz einstellen.
18			98,0 MHz 74 dB [400 Hz Mod.]	Antennen-steckdose	Lautsprecher-anschlüsse	98,0 MHz	VR4	• 10μ16V und 180 kΩ abnehmen. • Auf maximale Trennung einstellen.



9. UKW SUCHEMPF INDDICHKEITS-EINSTELLUNG

Stufe	Abgleich-objekt	Stellung des Wellenbereich-umschalters	Meßsender-frequenz	Ankopplung des Meßsenders	Anschluß des Anzeige-instruments	Anzeige	Abgleich	Ammerkung
19	UKW SUCHEMPF IN-DDICHKEITS	UKW	98,0 MHz 20 dB [400 Hz Mod.]	Antennen-steckdose	——	98,0 MHz	VR801	• Auf stoppen des suchlaufs bei 20 dB Eingang einstellen. • DX verwendung.



10. DOLBY NR ABGLEICH

Stufe	Abgleich-objekt	Testband	Anschluß des Anzeige-instruments	Abgleich	Anmerkung
20	DOLBY NR	TCC-130	TP1 – Erdung	VR201	• Auf 300 mV (±0,5 dB) stellen.
21		TCC-130	TP2 – Erdung	VR301	• Auf 300 mV (±0,5 dB) stellen.

OPERATION OF AUTO-REVERSE MECHANISM/ BEDIENUNG DES AUTO REPLAY MECHANISMUS

This deck is a full-logic control cassette deck which the sequence-drive mechanism is controlled by a microcomputer.

1. Outline of Mechanism (Deck 61X)

One motor achieves Logic Control of this deck with the direction of its rotation. In addition, three solenoids (S1 ~ S3) are equipped in order to changeover the mechanism. Power of the motor is also used to load or eject cassette tape. There are seven sensors (such as switch) which enable the microcomputer to know the conditions of the mechanism.

- **Principle of Operation**

1. When S3 is on:
   The power of the motor is sent to LOAD/EJECT mechanism. When the motor rotates to the counterclockwise, the torque is sent to EJECT mechanism. When it rotates to the clockwise, the torque is sent to Load Mechanism.

2. When S3 is off and the motor rotates to the counter clockwise:
   The torque of the motor is sent to reel base and flywheels. Magnetic tape runs after setting PLAY, FF, or REW mode.

3. When S3 is off and the motor rotates to the clockwise:
   The torque of the motor is sent to cam to change the operation mode of the mechanisms. Mechanism changeover, which was done by pressing lever by finger previously, is now done by the power of the motor. Table 1-1 shows the operations of the motor and the solenoids at each mode.

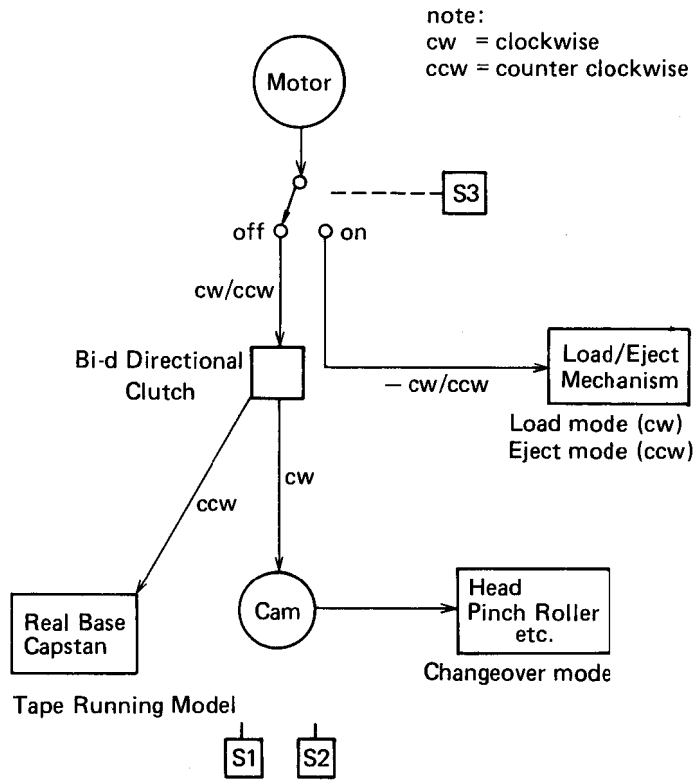


Fig. 1-1 Block diagram of mechanism

Solenoid	Change over mode	Play	F/FF R/REW	F/REW R/FF	Load	Eject	Wait mode	Motor stop
S1	X	1	0	1	0	0	0	0
S2	X	1	1	0	0	0	0	0
S3	1	1	1	1	0	0	1	1
Motor	**CW**	**CCW**	**CCW**	**CCW**	**CW**	**CCW**	**Wait**	**Stop**
M1	1	0	0	0	1	0	0	1
M2	0	1	1	1	0	1	0	1

Table 1-1 operation of the motor and the solenoids.

* There must be 100 msec. interval stop during changes of the direction of the motor between clockwise and counter counterclockwise.

2. Operation of Microcomputer for Logic Control

A microcomputer controls all the mechanisms except time constant selection of tape equalizer (120, 70 μsec.) and mode selection of noise reduction (Dolby-B).
Figure 1-2 shows block diagram of the deck control system.

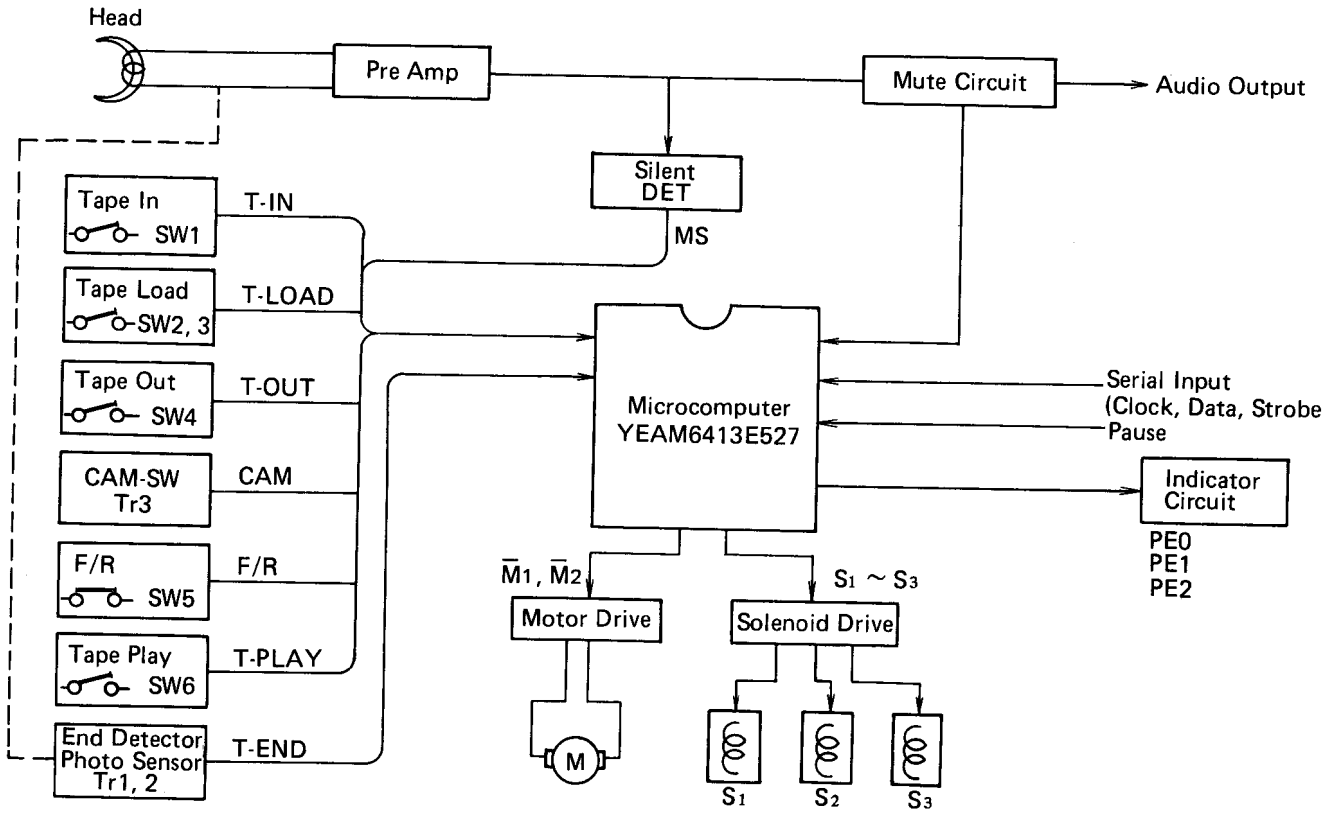


Fig. 2-1 Block diagram of the deck control system

3. MICROCOMPUTER YEAM6413E527

- **Names of terminals and discriptions of the functions**

Pin No.	Port	Name	In/Out	Discription
1	PD0	T-IN	Input	• Tape IN (SW1) The signal of this terminal indicates whether cassette tape is inserted into the mechanism or not. 0 = Cassette tape is inserted. 1 = Cassette tape is not inserted. This signal triggers Load mode operation.
2	PD1	CAM	Input	• CAM (CAM Signal Tr3) The signal of this termianl indicates position of cam. 0 = Changeover mode is completed. 1 = Changeover mode is not completed. This signal is used for detecting completion of changeover mode operation.
3	PD2	T-PLAY	Input	• Tape Play (SW6) The signal of this terminal indicates position of cam and whether the mechanism is at PLAY mode or not. 0 = At PLAY mode. 1 = Not at PLAY mode. At changeover mode, the signal indicates timing of control signals for the solenoids. At PLAY mode, it indicates that the mechanism is at PLAY mode.
4	PD3	MS	Input	• Silent Detector The signal of this terminal indicates whether there is sound on the tape or not. 0 = The tape is silent (between one music and another). 1 = There is sound on the tape. The signal is used for detecting music interval at TPS, SCAN, or REP mode operation.
5	EXtal	EXtal	Input	• External Clock Input Terminal

<table>
<tr><th>Pin No.</th><th>Port</th><th>Name</th><th>In/Out</th><th>Discription</th></tr>
<tr><td>6</td><td>Xtal</td><td>Xtal</td><td>Input
Output</td><td>● Terminal for connecting resonance circuit of the internal clock oscillator.</td></tr>
<tr><td>7</td><td>$\overline{INT}$</td><td>T-END</td><td>Input</td><td>● Tape End Detector
The signal of this terminal indicates pulse which accords with the rotation of reel base. This is used for detecting auto-reverse operation.</td></tr>
<tr><td>8</td><td>$\overline{RES}$</td><td>CE</td><td>Input</td><td>● Reset</td></tr>
<tr><td>9</td><td>PE0</td><td>Forward/
Reverse</td><td rowspan="2">Output</td><td>● F/R
0 = Reverse Play. 1 = Forward Play.</td></tr>
<tr><td>10</td><td>PE1</td><td>FF</td><td>● FF
0 = At FF mode. 1 = Not at FF mode.</td></tr>
<tr><td>11</td><td>PE2</td><td>REW</td><td>LED
Drive</td><td>● REW
0 = At REW mode. 1 = Not at REW mode.</td></tr>
<tr><td>12</td><td>PE3</td><td>MUTE</td><td>Output</td><td>● Mute
This is an output of mute signal which prevents noise during changeovers of the mechanism. 0 = MUTE off (at PLAY mode). 1 = MUTE on (not at PLAY mode).</td></tr>
<tr><td>13</td><td>TEST</td><td></td><td>Input</td><td>● Test terminal of this LSI. It is usually connected to Vss (GND).</td></tr>
<tr><td>14</td><td>Vss</td><td></td><td></td><td>● Ground</td></tr>
<tr><td>15</td><td>PF0</td><td>$\overline{M1}$</td><td>Output</td><td rowspan="2">● Motor Control Output
<table><tr><th></th><th>Wait</th><th>CCW</th><th>CW</th><th>Stop</th></tr><tr><td>$\overline{M_1}$</td><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>$\overline{M_2}$</td><td>0</td><td>1</td><td>0</td><td>1</td></tr></table></td></tr>
<tr><td>16</td><td>PF1</td><td>$\overline{M2}$</td><td>Output</td></tr>
<tr><td>17</td><td>PF2</td><td>S1</td><td>Output</td><td rowspan="2">● Solenoid Control Output
<table><tr><th></th><th>Play</th><th>A-FF
B-REW</th><th>A-REW
B-FF</th><th>Wait Mode</th></tr><tr><td>S_1</td><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>S_2</td><td>1</td><td>1</td><td>0</td><td>0</td></tr></table></td></tr>
<tr><td>18</td><td>PF3</td><td>S2</td><td>Output</td></tr>
<tr><td>19</td><td>PG0</td><td>S3</td><td>Output</td><td>● Solenoid Control Output
<table><tr><th></th><th>Load Eject</th><th>Other Modes</th></tr><tr><td>$\overline{S_3}$</td><td>0</td><td>1</td></tr></table></td></tr>
<tr><td>20</td><td>VDD</td><td>Power in</td><td>Input</td><td>● Power Supply (+5 V)</td></tr>
<tr><td>21</td><td>PA0</td><td>T-LOAD</td><td>Input</td><td>● Tape Load (SW3)
The signal of this terminal indicates whether cassette tape is at PLAY position or not. 0 = Cassette tape is at PLAY position. 1 = Cassette tape is not at PLAY position. This signal is used for detecting the completion of LOAD mode operation.</td></tr>
<tr><td>22</td><td>PA1</td><td>T-OUT</td><td>Input</td><td>● Tape Out (SW4)
The signal of this terminal indicates whether cassette tape is ejected or not. 0 = Cassette tape is not ejected. 1 = Cassette tape is ejected. This signal is used for detecting the completion of EJECT mode operation.</td></tr>
<tr><td>23</td><td>PA2</td><td>Forward/
Reverse</td><td>Input</td><td>● Forward/Reverse Detection (SW5)
0 = Forward Play. 1 = Reverse Play.</td></tr>
<tr><td>24</td><td>PA3</td><td></td><td>Input</td><td>● Input Terminal of Initial Data</td></tr>
<tr><td>25</td><td>PC0</td><td>CLOCK</td><td rowspan="4">Input</td><td rowspan="3">● Serial Input</td></tr>
<tr><td>26</td><td>PC1</td><td>DATA</td></tr>
<tr><td>27</td><td>PC2</td><td>STROBE</td></tr>
<tr><td>28</td><td>PC3</td><td>Pause</td><td>● Pause Input</td></tr>
</table>

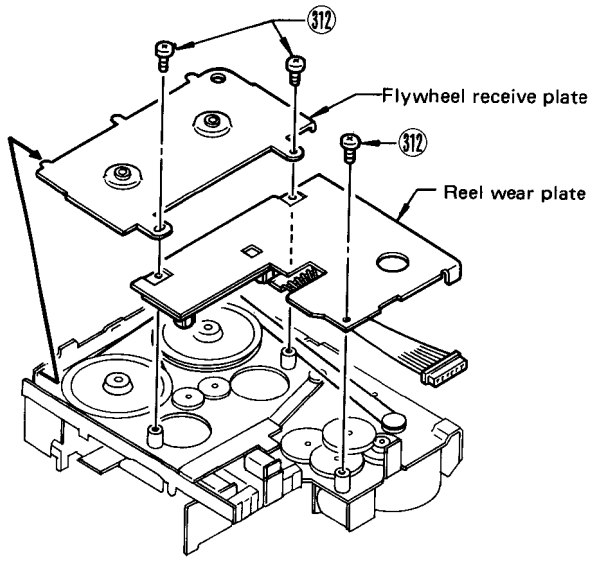
SERVICING OF CASSETTE DECK/ WARTUNGSHIN WEISE FÜR DAS CASSETTE

For the replacement of cassette deck components follow the "DISASSEMBLY INSTRUCTIONS" which is written on page 40 ~ 41 and then perform the following procedures.

REPLACEMENT (LOWER PORTION)

■ Numbers in O are indicated REF. No. in the REPLACEMENT PARTS LIST.

Unscrew 2 set screws (312) to remove the flywheel receive plate and reel wear plate from the chassis. The following parts can be replaced.

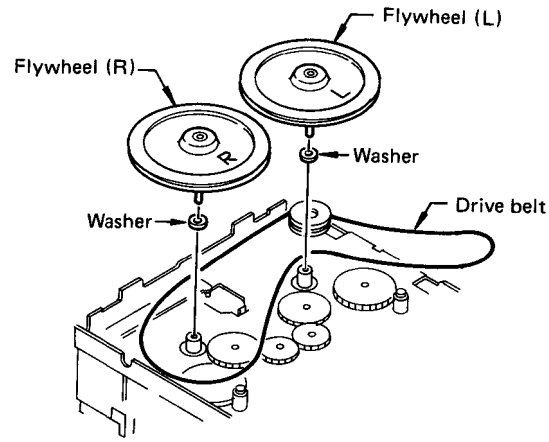


Flywheel:

- Replace the (R) or (L) of the old flywheel with a new one.

Note:

For replacement of the flywheel alone just remove the flywheel wear plate. However, to replace the flywheel it shall be necessary to reassemble the drive belt. Perform the replacement work by removing the reel wear plate ass'y.

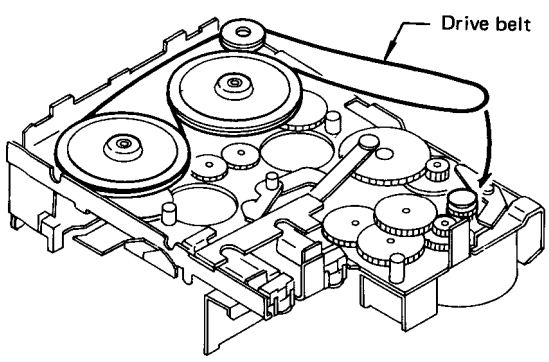


Drive belt:

- Remove the broken or faulty drive belt. Make sure that small broken pieces of the belt do not remain inside the deck.
- Apply the new belt as shown in the figure.

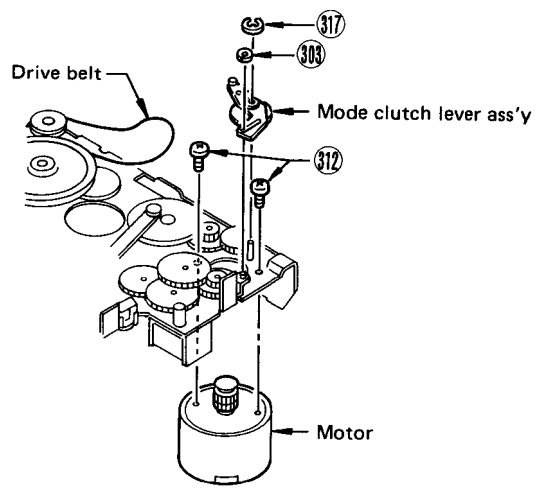
Note:

Apply the belt so as not to twist it. After the belt application is completed, confirm that the belt is normally applied by turning to left (L) or right (R) of the flywheel with your fingertip.



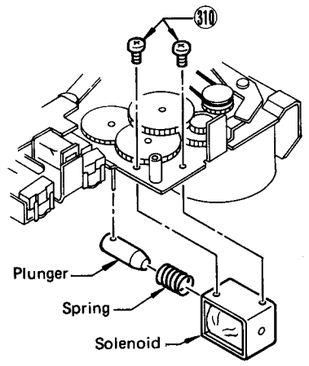
Motor:

- Remove the E ring (317) and the snap ring (303), then take away the mode clutch lever ass'y from the chassis.
- Replace the old motor with a new one and tighten the 2 set screws (312).
- After the belt has been applied, the mode clutch lever ass'y is assembled as before.



Solenoid:

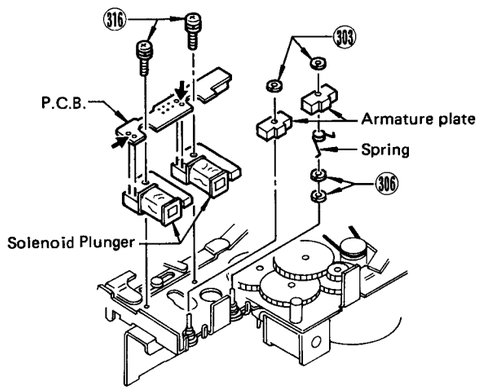
- Unscrew the 2 set screws (310) and assemble the pin parts of the new solenoid as before, then tighten the set screws to fix it.



Solenoid ass'y:

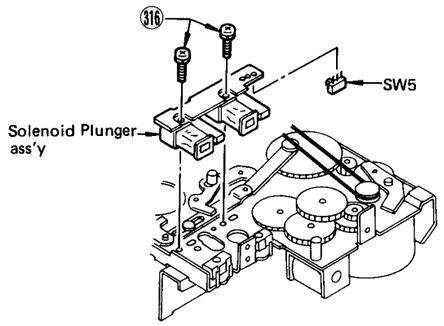
- Unscrew the 2 set screws (316) and remove the print board and the coil part of the solenoid ass'y from the chassis.
- Unsolder the portion indicated by an arrow in the drawing and replace with a new solenoid ass'y, then solder again.
- Replace the armature plate of the solenoid ass'y with the snap ring 303.

Note:
The solenoid ass'y is composed of the coil part and the armature plate as ass'y parts. Therefore, when one of them is replaced, the other part should also be replaced.



SW5 (Auto reverse switch):

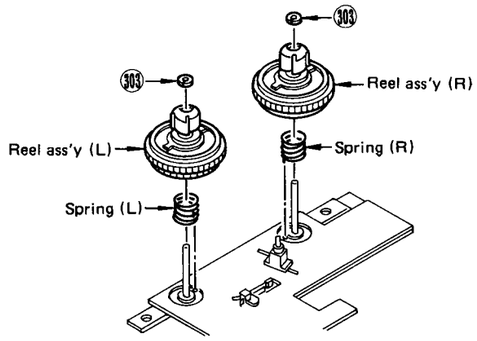
- Unscrew the 2 set screws (316) and remove the print board and the coil part of the solenoid ass'y from the chassis.



Right (R) or left (L) of reel plate:

- Remove the snap ring (303) and replace the old (R) or (L) of the reel plate with a new one.

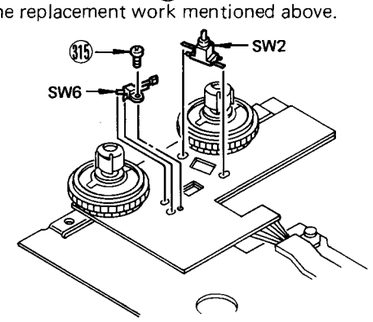
Note:
When replacing the reel plate, make sure to incorporate the (R) or (L) of the back tension spring under the reel plate. The back tension springs of the reel plate are indicated by left and right so as to eliminate the possiblity of a mix-up.



SW2 (Cassette detecting switch) and SW6 (Play switch):

- Unsolder the SW2 or SW6 to be replaced from the print board for the assembly of the reel wear plate ass'y and set an new switch, then solder it.

Note:
Unscrew the set screw (315) to remove the SW6 then perform the replacement work mentioned above.



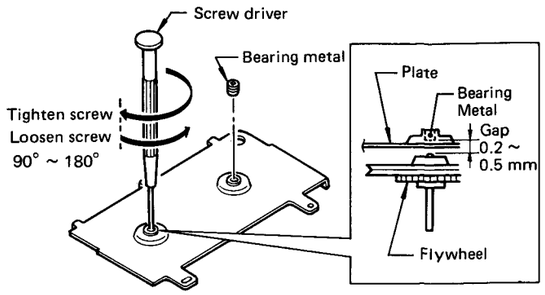
Bearing metal:

- Bearing metal is removed with a - driver.

Note:
For the replacement of the bearing metal, it is adjusted so that the gap between the flywheel and the bearing metal is to be 0.2 ~ 0.5 mm. Follow the procedure described below to maintain this gap.

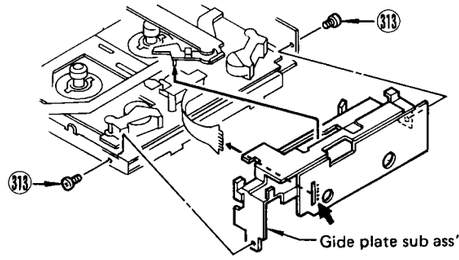
- Tighten the bearing metal softly and stop tightening when it requires pressure.
- Then, loosen the bearing metal 90° through 180° from its position. (The gap can be kept around 0.2 ~ 0.5 mm.)

* Unless the gap is not be specified value, wow flutter may occur, which will influence the tone quiality.
* Confirm that there is no abnormality in the tone quality, then adhere the metal to the flywheel with a bond.



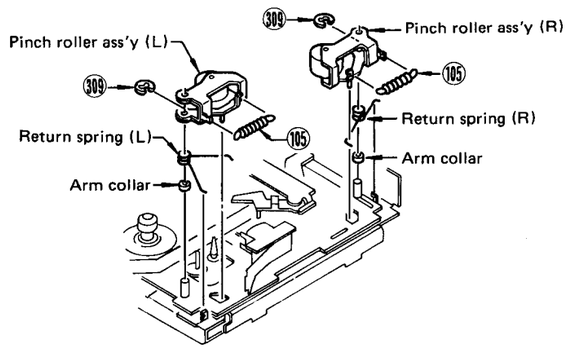
REPLACEMENT (UPPER PORTION)

Unscrew the 2 set screws (313) and unsolder the portion indicated by an arrow, then remove the guide plate sub-ass'y from the chassis. The head and pinch roller ass'y can be replaced.



Pinch roller ass'y:

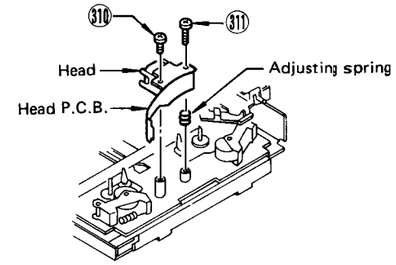
- Remove the pinch roller spring (105) and pull out the E ring (309) to remove the pinch roller ass'y from the shaft. Replace it with a new one.



Head:

- Remove each set screw (310), (311) and replace the old head with a new one.

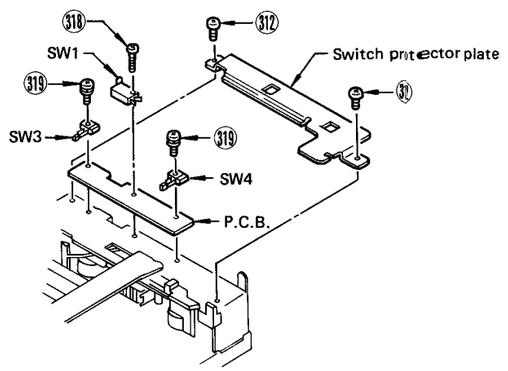
Note:
Make sure to incorporate the head adjusting spring of the set screw (311) side.



SW1 (Tape in), SW3 (Tape load), SW4 (Tape out):

- Unscrew 2 set screws (319) and the set screw (318) to remove the print board from the cassette guide plate sub-ass'y.
- Replace old switches with new ones.

After the replacement of parts, confirm that the replacement has been completed correctly, then assemble the deck into the set.



EXPLODED VIEW(UNIT)/AUFGELÖSTE DARSTELLUNGS(GANZES GERÄT)

CQ-977EE/EG
CQ-978EG

■ Numbers in ○ are indicated REF. No. in the REPLACEMENT PARTS LIST.

■ The symbols next to the screws indicate as fllows.

M18	◈	XSB26+4FXS	⊕Screw, Bind	2.6mmφ×4mm
M19	❖	YEJT03015	⊕Screw, Cuptight	3mmφ×6mm
M20	※	XTB3+6FFXS	⊕Screw, Tapping	3mmφ×6mm
M41	◎	XTB3+8FXS	⊕Screw, Tapping	3mmφ×8mm
M46	★	XSB2+4FXS	⊕Screw, Bind	2mmφ×4mm
M47	✣	YEJT03013	⊕Screw	
M52	◬	YEJT05013	⊕Screw	
M53	▣	XSS3+6FZS	⊕Screw	3mmφ×6mm
M54	※	XSB3+4FZS	⊕Screw	3mmφ×4mm

Replacement Parts List
Model NO. CQ-977EE/EG. CQ-978EG

NOTES:

1. Be sure to make your orders of replacement parts according to this list.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Next to the Ref. No. in the parts list is a location key, to show the general location of the parts shown in the exploded drawing, as in a road map.

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
MISCELLANEOUS				
PL1 (3-A)	YEAL30606WL	Pilot Lamp	1	
PL2 (2-A)	YEAL30606WL	Pilot Lamp	1	
PL3 (2-B)	YEAL31010WL	Pilot Lamp	1	
Z1 (2-C)	ERZD03DS331	Varistor	1	
F1 (3-C)	XBB1C50NS1	Fuse, 5A	1	
F2 (3-C)	XBB1C10NR1	Fuse, 3A	1	
CN201(P) (4-B)	EMCS0750ML	7P Plug	1	
CN201(J) (1-A)	EMCM0725D61	7P Jack	1	
CN650(P) (4-B)	EMCS1052M	10P Plug	1	CQ-978EG only
CN650(J) (1-A)	EMCM1020D61	10P Jack	1	CQ-978EG only
CN650(P) (4-B)	EMCS0952M	9P Plug	1	CQ-977EE/EG only
CN650(J) (1-A)	EMCS0920D61	9P Jack	1	CQ-977EE/EG only
CN651(P) (4-B)	EMCS0352M	3P Plug	1	
CN651(J) (3-B)	EMCM0328D61	3P Jack	1	
CN652(P) (4-B)	EMCS0752M	7P Plug	1	
CN652(J) (4-B)	EMCM0710D61	7P Jack	1	
CN653(P) (4-B)	EMCS0352M	3P Plug	1	
CN653(J) (4-B)	EMCM0310D61	3P Jack	1	
CN751(P) (4-C)	EMCS1050ML	10P Plug	1	CQ-978EG only
CN751(J) (1-B)	EMCM1022D61	10P Jack	1	CQ-978EG only
DIN (3-C)	YEAE01358	8Pin DIN Connector Cord	1	
M1 (2-A)	YEFE02116	Knob Volume	1	
M2 (2-A)	YEFE04078	Knob Fader	1	
M3 (4-B)	YEFA03669A	Top Cover	1	
M4 (1-C)	YEFV01745A	Insulator	1	
M5 (1-C)	YEFA05321A	Bottom Cover	1	
M6 (2-C)	YEAA10024	Antenna Receptacle	1	
M7 (3-A)	YEFX0211708	Mounting Bracket (Deck Front)	1	
M8 (3-C)	YEFX0211709A	Mounting Bracket (Deck Rear)	1	
M9 (2-C)	YEFX007349A	Cord Clamper	1	
M10 (2-A)	YEP0FX664	Escutcheon Ass'y	1	CQ-977EE/EG only
	YEP0FX663	Escutcheon Ass'y	1	CQ-978EG only
M11 (2-B)	YEAP1631A	Flexible PCB	1	
M12 (3-A)	YEFX001346	LCD Panel Light	1	
M13 (3-A)	YEFX999437	Color Filter	1	
M14 (2-A)	YEFA13594A	LCD Case	1	
M15 (2-A)	YEFV02433	Shade for LCD	1	
M16 (3-A)	YEFX0051011A	Spring	2	
M17 (2-C)	YEFX0211745	Mounting Bracket	1	
M18 ◈	XSB26 + 4FXS	⊕ Screw, Bind 2.6mmø x 4mm	4	
M19 ❖	YEJT03015	⊕ Screw, Cuptight 3mmø x 6mm	7	
M20 ⊛	XTB3 + 6FFXS	⊕ Screw, Tapping 3mmø x 6mm	17	
M21 (2-C)	YEFA13597	Case (Front END)	1	
M22 (1-C)	YEFA13598	Case (Front END)	1	
M23 (2-B)	YEFA13312	Case (L701)	1	
M24 (2-B)	YEFX0211527A	Mounting Bracket (IC217, 317)	1	
M25 (3-B)	YEFX0211718	Mounting Bracket (VR233, 234)	1	
M26 (1-B)	YEFX0211716	Mounting Bracket (Main PCB)	1	
M27 (2-C)	YEFX0211717	Mounting Bracket (Main PCB)	1	
M28 (3-C)	YEAJ04340B	Speaker Cord (R)	1	
M29 (3-C)	YEAJ04341B	Speaker Cord (L)	1	
M30 (3-C)	YEAJ01528	Power Supply Cord (ACC)	1	
M31 (3-C)	YEAJ01809	Power Supply Cord (ACC)	1	
M32 (3-C)	YEAJ01450	Power Supply Cord (Battery)	1	
M33 (3-C)	YEAJ01451	Power Supply Cord (Battery)	1	
M34 (3-C)	YEAJ01438	Power Supply Cord (Foot Switch)	1	
M35 (3-C)	YEAJ01168	Power Supply Cord (Motor ANT)	1	
M36 (2-C)	YEFA01783A	Chassis	1	
M37 (3-A)	YEFF01421A	Heat Sink	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
M40 ◎	XTB3 + 8FXS	⊕ Screw, Tapping 3mmø x 8mm	2	
M41 (2-B)	YEJV10006	Fix Bolt	1	
M42 (2-B)	YEFX999493	Reflection Plate	1	
M43 (2-A)	YEFR04233A	Illumination Cap	2	
M44 (2-A)	YEFR04159	Illumination Cap	1	
M45 (2-B)	YEFX018099A	Mount Base	1	
M46 ★	XSB2 + 4FXS	⊕ Screw, Bind 2mmø x 4mm	2	
M47 ✣	YEJT03013	⊕ Screw	3	
M48 (2-B)	YEFX0211549	Mounting Bracket	1	
M49 (2-B)	YEJN01042	Nut	1	
M50 (3-C)	YEFX007082	Cord Clamper	1	
M51 (1-C)	YEFX0211750	Mounting Bracket	1	
M52 ◬	YEJT05013	⊕ Screw	2	
M53 ▣	XSS3 + 6FZS	⊕ Screw 3mmø x 6mm	4	
M54 ※	XSB3 + 4FZS	⊕ Screw, Bind 3mmø x 4mm	2	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
M117	YEFW05235	Roller	1	
M118	YEFW05220	Pinch Roller Arm Collar	2	
M119	YEFX233209	Switch Protector Plate	1	
M120	YEFX235112	Guide Piece	1	
M121	YEFX999429	Steel Ball	1	
M122	YEFA01772	Head Chassis Ass'y	1	
M123	YEFX003294	FR Gear Plate Ass'y (L)	1	
M124	YEFX003296	FR Gear Plate Ass'y (R)	1	
M125	YEFX003298	Idler Gear Plate Ass'y	1	
M126	YEFX046793	Program Selector Plate	1	
M127	YEFX218225	Pinch Roller Ass'y	2	
M128	YEFX249297	Pressure Arm (L) Ass'y	1	
M129	YEFX249299	Pressure Arm (R) Ass'y	1	
M130	YEFX233210	Cassette Pressure Plate	1	
M131	YEFX249301	Lift Plate (1) Ass'y	1	
M132	YEFX249303	Lift Plate (2) Ass'y	1	
M133	YEFX239289	Cassette Guide Plate Sub Ass'y	1	
M134	YEFX235114	Cassette Guide	1	
M135	YEFX046798A	Switch Lever	1	
M136	YEAP1624B	P.C.B.	1	
M137	YEFX0051006	Spring, Switch Lever	1	
M138	YEFX046799	Carriage Ass'y	1	
M139	YEFX239292	Guide Plate Ass'y	1	
M140	YEFX215114A	Hook	1	
M141	YEFX0051001	Spring	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
MECHANICAL PARTS-LOWER PORTION				
M200	YASAK01053	DC Motor Ass'y	1	
M201	YEAX01054	Solenoid Plunger	2	
M202	YEFX005995	Spring, Selector	1	
M203	YEFX005996	Spring, Loading Gear (1)	1	
M204	YEFX0051012	Spring, Mode Clutch	1	
M205	YEFR03057	Drive Belt	1	
M206	YEFX003281	Idler Gear (A)	2	
M207	YEFX003282	Idler Gear (B)	2	
M208	YEFX003283	FR Gear	2	
M209	YEFX003284A	Drive Gear (1)	1	
M210	YEFX003285A	Drive Gear (2)	1	
M211	YEFX003287	Drive Gear	1	
M212	YEFX003288A	Loading Gear (1)	1	
M213	YEFX003289A	Loading Gear (2)	1	
M214	YEFX003290	Loading Gear (3)	1	
M215	YEFX003291	Loading Gear (4)	1	
M216	YEFX026104	Idler Pulley	1	
M217	YEFX046780	H Link (L)	1	
M218	YEFX046781	H Link (R)	1	
M219	YEFX213178	Flywheel (L)	1	
M220	YEFX213179	Flywheel (R)	1	
M221	YEFX213180	Flywheel Receive Plate	1	
M222	YEFX999436	Detecting Label	1	
M223	YEFA01770	Chassis Ass'y	1	
M224	YEFX046796	Clutch Lever Ass'y	1	
M225	YEP0FX634	Plate Sub Ass'y	1	
M226	YEFX209222	Reel Ass'y (L)	1	
M227	YEFX209223	Reel Ass'y (R)	1	
M228	YEFX007338	Cord Clamp	1	
M229	YEFX0051004	Spring, Back-tention (L)	1	
M230	YEFX0051005	Spring, Back-tention (R)	1	

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Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
SCREWS, WASHERS, SNAPRING & E-RINGS				
M301	YEJE01014	E-Ring	3	
M302	YEJW05013	Washer	1	
M303	YEFX014007	Snap Ring	13	
M304	YAJW05010	Washer	2	
M305	YEJW05038	Washer	1	
M306	YEJW05002	Washer	2	
M307	YEFX014019	Snap Ring	1	
M308	YEFX014008	Snap Ring	7	
M309	YEJE01004	E-Ring	13	
M310	XSB2 + 3FX	⊕ Screw, Bind 2mmø x 3mm	6	
M311	XSB2 + 8FX	⊕ Screw, Bind 2mmø x 8mm	1	
M312	XSB26 + 3FXS	⊕ Screw, Bind 2.6mmø x 3mm	8	
M313	XSB26 + 3FX	⊕ Screw, Bind 2.6mmø x 3mm	3	
M314	XYN2 + F4FXS	⊕ Screw w/Washer 2mmø x 4mm	2	
M315	XYN2 + C4FXS	⊕ Screw w/Washer 2mmø x 4mm	2	
M316	YEJS06048	⊕ Screw	2	
M317	XUC15FXZ	E-Ring	1	
M318	YEJS02012FZ	⊕ Screw 1.6mmø x 8mm	1	
M319	XYN2 + C5FXS	⊕ Screw w/Washer 2mmø x 5mm	2	
M320	XYN26 + C5FXS	⊕ Screw w/Washer 2.6mmø x 5mm	2	

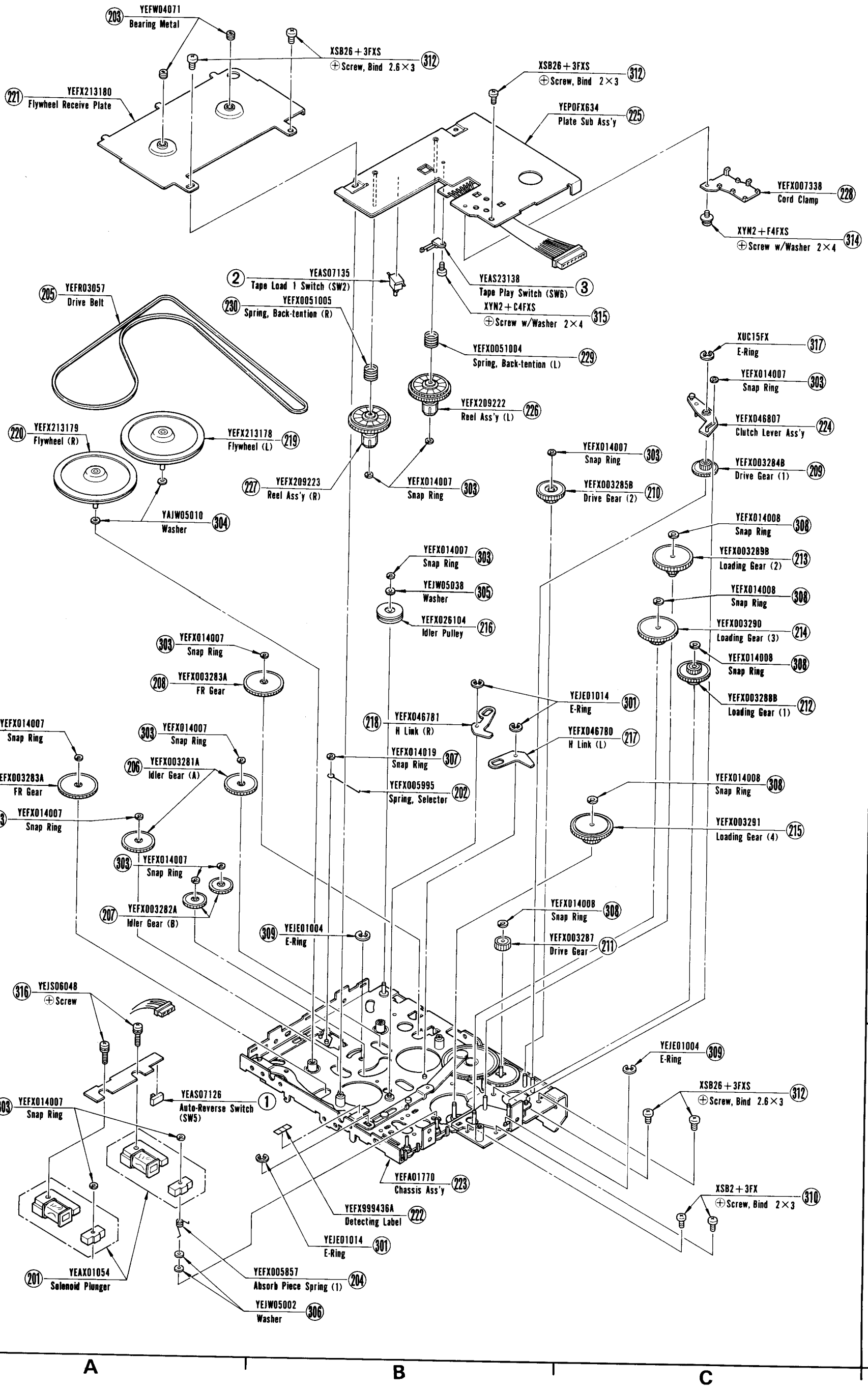
Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
ICs AND TRANSISTORS				
RADIO BLOCK				
IC1	AN7264C	FM Front End	1	
IC2	AN7466C	FM EIA & MPX	1	
IC3	AN7268C	FM IF Amp W/Detector	1	
IC4	YEAMUPC1296G	AM RF Amp Conv. IF Amp w/Detector	1	
Q1	UN2213TW	DX/LOC Switching	1	
Q2	YEANK131LT2	FM RF Amp	1	
Q3	YEANC1623	FM ASC Switching	1	
Q4, 5	YEANC1623	AF Buffer Amp	2	
Q6	YEANA812	FM IF Switching	1	
Q7	2SC1684RST	AGC RF Amp	1	
Q8	YEAN2SK519	AGC RF Amp	1	
Q9	YEANC1623	DX/LOC Switching	1	
Q10	UN2213TW	DX/LOC Switching	1	
Q11, 12	2SD1030TW	MW/LW Switching	2	
Q13	YEANC1623	AM Switching	1	
CONTROL AND AUDIO BLOCK				
IC216	YEAMUPD4052C	Switching	1	
IC218	AN6552	AF Amp	1	
IC217, 317	YEAMLA4460	AF Power Amp	2	
IC316	AN6552S	Bass/Tre Amp	1	
IC701	YEAMNJM78L05	Voltage Stabilizer	1	
IC753	YEAMUPD4001C	Switching	1	CQ-978EG only
IC801	YEAM1713G522	Microcomputer / LCD Driver	1	
IC802	YEAMUPD4001BG	Switching	1	
IC803	YEAMUPD4001C	Switching	1	
IC804	YEAMUPD4081C	Switching	1	

EXPLODED VIEW(TAPE DECK)/AUFGELÖSTE DARSTELLUNGS(TONBAND GERÄT)

■ Numbers in O are indicated REF. No. in the REPLACEMENT PARTS LIST.

EXPLODED VIEW(TAPE DECK)/AUFGELÖSTE DARSTELLUNGS(TONBANDGERÄT)

■ Numbers in ○ are indicated REF. No. in the REPLACEMENT PARTS LIST.



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Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
IC805, 806	YEAMUPD4094BC	Shift/Store Bus Register	2	
Q220	YEANC1623	Switching	1	
Q221	YEANC1623	AF Amp	1	
Q222	YEAN2SK336	Amp	1	
Q223	2SD1030TW	Muting	1	
Q315	YEANDTC144S	Loudness Switching	1	
Q320	2SD636RST	Switching	1	
Q321	YEANC1623	AF Amp	1	
Q322	YEAN2SK336	AF Amp	1	
Q323	2SD1030TW	Muting	1	
Q701	2SC1383NC	Voltage Stabilizer	1	
Q702, 703	YEAN2SA1175	LW/MW/FM Switching	2	
Q704	YEANDTC144S	FM Switching	1	
Q706	2SB643	FM Switching	1	
Q707	YEANDTA144S	LW Switching	1	
Q708	YEANDTC144S	LW Switching	1	
Q709	YEAN2SD1020	Voltage Stabilizer	1	
Q711	YEAN2SA1175	MW Switching	1	
Q712	YEANDTC144S	MW Switching	1	
Q714, 715	YEANC1623	LED Switching	2	
Q716	YEAN2SC2785	LED Switching	1	
Q717, 718	YEANC1623	LED Switching	2	
Q801	YEANC1623	CE Control	1	
Q802	YEAN2SK336	Low Pass Filter	1	
Q803, 804	YEAN2SC2785	CE Control, Muting	2	
Q805	YEANDTA144S	Muting	1	
Q806	YEAN2SC2785	Seek Stop Control	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
TAPE BLOCK				
IC1	MN4069UBS	Switching	1	
IC51	YEAMTA7705F	Tape EQ Amp	1	
IC215	YEAMLA2000S	TPS Control	1	
IC315	YEAMHA12047	Dolby NR	1	
IC651	YEAM6413E527	Microcomputer	1	
IC652	YEAMM54544L	Motor Control	1	
IC653	YEAMNJM78L05	Voltage Stabilizer	1	
IC654	YEAMUPC78M10	Voltage Stabilizer	1	
IC751	AN6552	OP Amp BK/DK	1	CQ-978EG only
IC752	YEAMLA2220	Traffic Recorder (SK)	1	CQ-978EG only
Tr 1, 2, 3	YEADGP2S06AB	Photo Coupler	3	
Q215	YEAN2SD1020	Power Control	1	
Q216	YEANDTA144S	Voltage Stabilizer	1	
Q217	YEAN2SC2785	Voltage Stabilizer	1	
Q651	YEANDTA144S	Solenoid Control	1	
Q652, 653	YEAN2SC3068	Solenoid Control	2	
Q654	2SD966PQR	Solenoid Control	1	
Q751, 752	YEAN2SC2785	BK/DK Control	2	CQ-978EG only
Q753	YEANDTC144S	Switching	1	CQ-978EG only
DIODES				
RADIO BLOCK				
D1 to D3	YEADKV1340AS	Variable Capacitance Diode	3	
D4	MA153TX		1	
D7	MA151K		1	
D8	MA151ATW		1	
D9	MA151K		1	
D10	MA153TW		1	
D12, 15, 16	YEADSVC321CD	Variable Capacitance Diode	3	
D14	MA153TW		1	
D17	YEADRD56JB3	Voltage Stabilizer	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
CONTROL AND AUDIO BLOCK				
D303	MA151KTW		1	
D701	YEADRD91EB2		1	
D702, 706, 707	MA165		3	
D708	MA151KTW		1	
D709	YEAD10E2		1	
D710	YEADRD56JB3	Voltage Stabilizer	1	
D711	MA165		1	
D801	MA165		1	
D802	MA151KTW		1	
D803	MA165		1	
D804	MA165		1	CQ-978EG only
D805 to 816	MA165		12	
D817	MA151KTW		1	CQ-977EE/EG only
D819	MA1068MH	Voltage Stabilizer	1	
D820, 821	MA1051LM	Voltage Stabilizer	2	
D822 to 824	MA165		3	
D825	MA165		1	
TAPE BLOCK				
D200	YEADRD91EB2	Voltage Stabilizer	1	
D651, 652	MA165		2	
D653 to 655	YEAD10E2		3	
D751, 752	MA165		2	
INDICATOR BLOCK				
D51, 62 to 65	LN01301C-QTA	LED	5	
D52 to 59	LN01801C	LED	8	
D66	LN01401C	LED	1	
D60	YEADAA4524K	LED	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
CAPACITORS				
RADIO BLOCK				
C1, 2	YECUV1H180JM	18 PF 50WV Chip	1	
C2	YECUV1H100DM	10 PF 50WV Chip	1	
C3	YECUV1H080DM	8 PF 50WV Chip	1	
C5	YECUV1H020CM	2 PF 50WV Chip	1	
C6	YECUV1H102KX	0.001 MFD 50WV Chip	1	
C7 to 9	YECUV1H102KX	0.001 MFD 50WV Chip	3	
C11	YECUV1H080CM	8 PF 50WV Chip	1	
C12	YECUV1H020CM	2 PF 50WV Chip	1	
C13	YECUV1H100DM	10 PF 50WV Chip	1	
C14	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C15, 16	YECUV1H103KX	0.01 MFD 50WV Chip	2	
C17	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C19	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C20	YECUV1H102KX	0.001 MFD 50WV Chip	1	
C21	YECUV1H050CM	5 PF 50WV Chip	1	
C22	YECUV1H390JM	39 PF 50WV Chip	1	
C23	YECUV1H020CM	2 PF 50WV Chip	1	
C24	YECUV1H390JM	39 PF 50WV Chip	1	
C25	YECUV1H102KX	0.001 MFD 50WV Chip	1	
C26	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C27	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C28	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C29	YECUV1E224ZF	0.22 MFD 25WV Chip	1	
C30	YECUV1E224ZF	0.22 MFD 25WV Chip	1	
C31	YECQP2A471JV	470 PF 100WV Polyester	1	
C32	ECSF1AE106	10 MFD 10WV Tantalum	1	
C33	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C34	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C35	YECUV1H040CM	4 PF 50WV Chip	1	
C36	YECUV1H680JM	68 PF 50WV Chip	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C37	YECUV1H332KX	0.0033 MFD 50WV Chip	1	
C38	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C39	YECUV1E473KX	0.047 MFD 25WV Chip	1	
C40	YECUV1H222KX	0.0022 MFD 50WV Chip	1	
C41	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C42	ECEQ1CKS100	10 MFD 16WV Electrolytic	1	
C43	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C44 to 46	YECUV1H223KX	0.022 MFD 50WV Chip	3	
C47	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C48, 49	YECUV1E224ZF	0.22 MFD 25WV Chip	2	
C50	ECEA1HKSR47	0.47 MFD 50WV Electrolytic	1	
C51	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C52	YECUV1H050CM	5 PF 50WV Chip	1	
C53	YECUV1H333KX	0.033 MFD 50WV Chip	1	
C54	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C55	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C56	ECEA1HKSR22	0.22 MFD 50WV Electrolytic	1	
C57	YECUV1H221JM	220 PF 50WV Chip	1	
C58, 59	YECUV1H223KX	0.022 MFD 50WV Chip	2	
C59	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C60	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C61	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C63 to 64	YECUV1H223KX	0.022 MFD 50WV Chip	2	
C65	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C66	YECUV1E104ZF	0.1 MFD 25WV Chip	1	
C67, 68	YECUV1H223KX	0.022 MFD 50WV Chip	2	
C69	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C70	YECUV1E473KX	0.047 MFD 25WV Chip	1	
C71	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C72	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C73	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C74	ECEA1CKS220	22 MFD 16WV Electrolytic	1	
C75	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C77	YECUV1H473KX	0.047 MFD 50WV Chip	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C79	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C80	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C81	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C82	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C84	YECUV1E473KX	0.047 MFD 25WV Chip	1	
C86	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C87	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C89	YECUV1H100DM	10 PF 50WV Chip	1	
C90	YECUV1H271JM	270 PF 50WV Chip	1	
C91	YECUV1H221JM	220 PF 50WV Chip	1	
C92	YECUV1H271JM	270 PF 50WV Chip	1	
C93	ECQV1H104JZ	0.1 MFD 50WV Polyester	1	
C94	YECUV1H223KX	0.022MFD 50WV Chip	1	
C96	YECUV1E104ZF	0.1 MFD 25WV Chip	1	
C97	ECEA1AKS470	47 MFD 10WV Electrolytic	1	
C98	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C100	ECSF1AE226	22 MFD 10WV Tantalum	1	
C101	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C102	YECUV1E393KX	0.039 MFD 25WV Chip	1	
C103	YECUV1E104ZF	0.1 MFD 25WV Chip	1	
C104	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C105	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C106	ECEA1AKS470	47 MFD 10WV Electrolytic	1	
C108	YECUV1H223KX	0.022 MFD 50WV Chip	1	
C109	YECUV1H473KX	0.047 MFD 50WV Chip	1	
C110	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C111	ECSF1CE106	10 MFD 16WV Tantalum	1	
C112	YECUV1H223KX	0.022 MFD 50WV Chip	1	

MODELS CQ-977EE/EG, CQ-978EG

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
		CONTROL AND AUDIO BLOCK		
C230	ECEA1HK010	1 MFD 50WV Electrolytic	1	
C231	YECUV1H153KX	0.015 MFD 50WV Chip	1	
C232	YECUV1H153KX	0.015 MFD 50WV Chip	1	
C233	YECUV1H102KX	0.001 MFD 50WV Chip	1	
C234	YECUV1H331JM	330 PF 50WV Chip	1	
C235	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C236	YECQZ1H472K	0.0047 MFD 50WV Polyester	1	
C237	ECEA1HKSR33	0.33 MFD 50WV Electrolytic	1	
C238	ECEA1CK100	10 MFD 16WV Electrolytic	1	
C239	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C240	YECUV1H102KX	0.001 MFD 50WV Chip	1	
C241	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C242	ECEA1AS470	47 MFD 10WV Electrolytic	1	
C243	ECEA1AS470	47 MFD 10WV Electrolytic	1	
C244, 245	YECUV1E333KX	0.033 MFD 25WV Chip	2	
C246	ECEA1CV102WX	1000 MFD 16WV Electrolytic	1	
C247	YECUV1E104ZF	0.1 MFD 25WV Chip	1	
C248	ECQV1H474JZ	0.47 MFD 50WV Polyester	1	
C249	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C250	ECEA1AKS330	33 MFD 10WV Electrolytic	1	
C251	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C258	ECEA1AU331	330 MFD 10WV Electrolytic	1	
C261	ECEA1CKS100	10 MFD 16WV Electrolytic	1	CQ-977EE/EG only
C318	ECEA1AK220	220 MFD 10WV Electrolytic	1	
C319	ECEA1AKS470	47 MFD 10WV Electrolytic	1	
C330	ECEA1HK010	1 MFD 50WV Electrolytic	1	
C331	YECUV1H153KX	0.015 MFD 50WV Chip	1	
C332	YECUV1H153KX	0.015 MFD 50WV Chip	1	
C333	YECUV1H102KX	0.001 MFD 50WV Chip	1	
C334	YECUV1H331JM	330 PF 50WV Chip	1	
C335	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C336	YECUV1H472KX	0.0047 MFD 50WV Chip	1	
C337	ECEA1HKSR33	0.33 MFD 50WV Electrolytic	1	
C338	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C339	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C340	YECUV1H102KX	0.001 MFD 50WV Chip	1	
C341	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C342	ECEA1AS470	47 MFD 10WV Electrolytic	1	
C343	ECEA1AS470	47 MFD 10WV Electrolytic	1	
C344	YECUV1E333KX	0.033 MFD 25WV Chip	1	
C345	YECUV1E333KX	0.033 MFD 25WV Chip	1	
C346	ECEA1CV102WX	1000 MFD 16WV Electrolytic	1	
C347	ECQV1H104JZ	0.1 MFD 50WV Polyester	1	
C348	ECQV1H474JZ	0.47 MFD 50WV Polyester	1	
C349	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C350	ECEA1AKS330	33 MFD 10WV Electrolytic	1	
C351	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C701	YECUV1H103ZF	0.01 MFD 50WV Chip	1	
C702	YECUV1H103ZF	0.01 MFD 50WV Chip	1	
C703	ECEA1AS470	47 MFD 10WV Electrolytic	1	
C704	YECUV1H103ZF	0.01 MFD 50WV Chip	1	
C705	ECEA1AKS330	33 MFD 10WV Electrolytic	1	
C706	ECEA1AKS470	47 MFD 10WV Electrolytic	1	
C707	YECUV1H103ZF	0.01 MFD 50WV Chip	1	
C710	ECEA1HKS010	1 MFD 50WV Electrolytic	1	
C774	YECUV1H222KX	0.0022 MFD 50WV Chip	1	CQ-978EG only
C801	YECUV1H103KX	0.01 MFD 50WV Chip	1	
C802	ECEA0JKS101	100 MFD 6WV Electrolytic	1	
C803	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C804	YECUV1H220JM	22 PF 50WV Chip	1	
C805	YECUV1H220JM	22 PF 50WV Chip	1	
C806	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C807	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C808	ECEA1CKS100	10 MFD 16WV Electrolytic	1	
C810	ECEA1AU101	100 MFD 10WV Electrolytic	1	
C811	ECSF1VE475	4.7 MFD 35WV Tantalum	1	

Ref. No.	Part No.	Part Name & Description			Pcs Set	Remarks
C812	YECUV1H103KX	0.01 MFD	50WV	Chip	1	
C813	YECUV1H103ZF	0.01 MFD	50WV	Chip	1	
C814	ECEA0JKS101	100 MFD	6WV	Electrolytic	1	
C815	ECEA0JKS101	100 MFD	6WV	Electrolytic	1	
C820	YECUV1H681JM	680 PF	50WV	Chip	1	
C821	YECUV1H103KX	0.01 MFD	50WV	Chip	1	CQ-978EG only
CS701, 702	YECCL55B222M	2200 PF		Feedthrough	2	
		TAPE BLOCK				
C1	YECCD1H103KX	0.01 MFD	50WV	Ceramic	1	
C3	YECUV1E224ZF	0.22 MFD	25WV	Chip	1	
C51 to 54	YECUV1H681JM	680 PF	50WV	Chip	4	
C55, 56	YECUV1H103KX	0.01 MFD	50WV	Chip	2	
C57	ECEA0JKS220	22 MFD	6WV	Electrolytic	1	
C58	ECEA1CKS100	10 MFD	16WV	Electrolytic	1	
C59	ECEA0JKS220	22 MFD	6WV	Electrolytic	1	
C60	YECUV1E224ZF	0.22 MFD	25WV	Chip	1	
C215	ECEA1EK4R7	4.7 MFD	25WV	Electrolytic	1	
C216	ECEA1HKR47	0.47 MFD	50WV	Electrolytic	1	
C217	YECUV1H103KX	0.01 MFD	50WV	Chip	1	
C218	ECEA1EK4R7	4.7 MFD	25WV	Electrolytic	1	
C219	ECEA1CK100	10 MFD	16WV	Electrolytic	1	
C220	YECUV1H183KX	0.018MFD	50WV	Chip	1	
C221	ECEA1HK010	1 MFD	50WV	Electrolytic	1	
C222	ECEA1EK4R7	4.7 MFD	25WV	Electrolytic	1	
C223	YECQZ1H472J	0.0047 MFD	50WV	Polyester	1	

Ref. No.	Part No.	Part Name & Description			Pcs Set	Remarks
C224	ECEA1HK010	1 MFD	50WV	Electrolytic	1	
C225	ECQB1H183JZ	0.018 MFD	50WV	Polyester	1	
C226	ECEA1HKR22	0.22 MFD	50WV	Electrolytic	1	
C227	ECEA1HKR47	0.47 MFD	50WV	Electrolytic	1	
C228	ECEA1HKR22	0.22 MFD	50WV	Electrolytic	1	
C229	ECQV1H333JZ	0.033 MFD	50WV	Polyester	1	
C315	ECEA1CK100	10 MFD	16WV	Electrolytic	1	
C316	ECEA1AS221	220 MFD	10WV	Electrolytic	1	
C317	ECEA1AK470	47 MFD	10WV	Electrolytic	1	
C318	ECEA1AK220	22 MFD	10WV	Electrolytic	1	
C320	YECUV1H183KX	0.018 MFD	50WV	Chip	1	
C321	ECEA1HK010	1 MFD	50WV	Electrolytic	1	
C322	ECEA1EK4R7	4.7 MFD	25WV	Electrolytic	1	
C323	YECQZ1H472J	0.0047 MFD	50WV	Polyester	1	
C324	ECEA1HK010	1 MFD	50WV	Electrolytic	1	
C325	ECQB1H183JZ	0.018 MFD	50WV	Polyester	1	
C326	ECEA1HKR22	0.22 MFD	50WV	Electrolytic	1	
C327	ECEA1HKR47	0.47 MFD	50WV	Electrolytic	1	
C328	ECEA1HKR22	0.22 MFD	50WV	Electrolytic	1	
C329	ECQV1H333JZ	0.033 MFD	50WV	Polyester	1	
C651	YECUV1H221JS	220 PF	50WV	Chip	1	
C652	YECUV1H221JS	220 PF	50WV	Chip	1	
C653	ECEA1CS152SZ	1500 MFD	16WV	Electrolytic	1	
C654	ECEA0JS101	100 MFD	6WV	Electrolytic	1	
C751	ECQV1H104JZ	0.1 MFD	50WV	Polyester	1	CQ-978EG only
C752	ECQV1H104JZ	0.1 MFD	50WV	Polyester	1	CQ-978EG only
C753	ECEA1HK010	1 MFD	50WV	Electrolytic	1	CQ-978EG only
C754	YECUV1H822K	0.0082 MFD	50WV	Chip	1	CQ-978EG only
C755	ECQV1H104JZ	0.1 MFD	50WV	Polyester	1	CQ-978EG only
C756	ECEA1HK010	1 MFD	50WV	Electrolytic	1	CQ-978EG only
C757	ECEA1HK010	1 MFD	50WV	Electrolytic	1	CQ-978EG only
C758	ECEA1HK2R2	2.2 MFD	50WV	Electrolytic	1	CQ-978EG only
C759	ECEA1AK470	47 MFD	10WV	Electrolytic	1	CQ-978EG only
C760	ECEA1AK470	47 MFD	10WV	Electrolytic	1	CQ-978EG only

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C761	ECEA1CK100	10 MFD 16WV Electrolytic	1	CQ-978EG only
C762	ECEA1CK100	10 MFD 16WV Electrolytic	1	CQ-978EG only
C763	ECEA1AS101	100 MFD 10WV Electrolytic	1	CQ-978EG only
C764	ECEA1HKR47	0.47 MFD 50WV Electrolytic	1	CQ-978EG only
C765	YECUV1E473KX	0.047 MFD 25WV Chip	1	CQ-978EG only
C766	ECEA1HKR33	0.33 MFD 50WV Electrolytic	1	CQ-978EG only
C767	ECEA1HK010	1 MFD 50WV Electrolytic	1	CQ-978EG only
C768	ECEA1AS101	100 MFD 10WV Electrolytic	1	CQ-978EG only
C769	YECUV1H102KX	0.001 MFD 50WV Chip	1	CQ-978EG only
C770	YECUV1H102KX	0.001 MFD 50WV Chip	1	CQ-978EG only
C771	YECUV1H222KX	0.022 MFD 50WV Chip	1	CQ-978EG only
C772	ECEA1AK220	22 MFD 10WV Electrolytic	1	CQ-978EG only
C773	ECQV1H683JZ	0.068 MFD 50WV Polyester	1	CQ-978EG only
C775	YECQV1H473JZ	0.047 MFD 50WV Polyester	1	CQ-978EG only

RESISTORS

RADIO BLOCK

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
R1	ERJ8GCJ224	220k ohms 1/8W Chip	1	
R2	ERJ8GCJ104	100k ohms 1/8W Chip	1	
R3	ERJ8GCJ473	47k ohms 1/8W Chip	1	
R4	ERJ8GCJ563	56k ohms 1/8W Chip	1	
R5	ERJ8GCJ104	100k ohms 1/8W Chip	1	
R6	ERJ8GCJ102	1k ohms 1/8W Chip	1	
R7	ERJ8GCJ331	330 ohms 1/8W Chip	1	
R8	ERJ8GCJ470	47 ohms 1/8W Chip	1	
R9, 10	ERJ8GCJ104	100k ohms 1/8W Chip	2	
R11	ERJ8GCJ104	100k ohms 1/8W Chip	1	
R12	ERJ8GCJ222	2.2kohms 1/8W Chip	1	
R13	ERJ8GCJ224	220k ohms 1/8W Chip	1	
R14	ERJ8GCJ473	47k ohms 1/8W Chip	1	
R15	ERJ8GCJ222	2.2k ohms 1/8W Chip	1	
R16	ERJ8GCJ223	22k ohms 1/8W Chip	1	
R17	ERJ8GCJ332	3.3k ohms 1/8W Chip	1	
R18	ERJ8GCJ474	470k ohms 1/8W Chip	1	
R19	ERJ8GCJ682	6.8k ohms 1/8W Chip	1	
R20	ERJ8GCJ472	4.7k ohms 1/8W Chip	1	
R21	ERJ8GCJ102	1k ohms 1/8W Chip	1	
R24 to 25	ERJ8GCJ103	10k ohms 1/8W Chip	2	
R26	ERJ8GCJ224	220k ohms 1/8W Chip	1	
R27	ERJ8GCJ103	10k ohms 1/8W Chip	1	
R28	ERJ8GCJ102	1k ohms 1/8W Chip	1	
R29	ERJ8GCJ224	220k ohms 1/8W Chip	1	
R30	ERJ8GCJ101	100 ohms 1/8W Chip	1	
R31	ERJ8GCJ272	2.7k ohms 1/8W Chip	1	
R32	ERJ8GCJ183	18k ohms 1/8W Chip	1	
R33	ERJ8GCJ223	22k ohms 1/8W Chip	1	
R34	ERJ8GCJ331	330 ohms 1/8W Chip	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
R35	ERJ8GCJ472	4.7k ohms 1/8W Chip	1	
R36	ERJ8GCJ224	220k ohms 1/8W Chip	1	
R37	ERJ8GCJ104	100k ohms 1/8W Chip	1	
R38	ERJ8GCJ101	100 ohms 1/8W Chip	1	
R39	ERJ8GCJ680	68 ohms 1/8W Chip	1	
R40	ERJ8GCJ392	3.9k ohms 1/8W Chip	1	
R41	ERJ8GCJ822	8.2k ohms 1/8W Chip	1	
R43	ERJ8GCJ104	100k ohms 1/8W Chip	1	
R45, 46	ERJ8GCJ104	100k ohms 1/8W Chip	2	
R47	ERJ8GCJ104	100k ohms 1/8W Chip	1	
R48, 49	ERJ8GCJ222	2.2k ohms 1/8W Chip	2	
R50	ERJ8GCJ102	1k ohms 1/8W Chip	1	
R51	ERJ8GCJ472	4.7k ohms 1/8W Chip	1	
R52	ERJ8GCJ151	150 ohms 1/8W Chip	1	
R53	ERJ8GCJ473	47k ohms 1/8W Chip	1	
R54	ERJ8GCJ222	2.2k ohms 1/8W Chip	1	
R55	ERJ8GCJ472	4.7k ohms 1/8W Chip	1	
R57	ERJ8GCJ183	18k ohms 1/8W Chip	1	
R58	ERJ8GCJ822	8.2k ohms 1/8W Chip	1	
R59	ERJ8GCJ103	10k ohms 1/8W Chip	1	
R62, 63	ERJ8GCJ103	10k ohms 1/8W Chip	2	
R67	ERJ8GCJ563	56k ohms 1/8W Chip	1	
R68	ERJ8GCJ101	100 ohms 1/8W Chip	1	
R69, 70	ERJ8GCJ100	10 ohms 1/8W Chip	2	
R71	ERJ8GCJ153	15k ohms 1/8W Chip	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
		CONTROL AND AUDIO BLOCK		
R230	ERD10TLJ152	1.5k ohms 1/8W Chip	1	
R232	ERD10TLJ153	15k ohms 1/8W Chip	1	
R233	ERDS2TJ392	3.9k ohms 1/8W Carbon	1	
R234	ERDS2TJ273	27k ohms 1/8W Carbon	1	
R235	ERD10TLJ123	12k ohms 1/8W Chip	1	
R236	ERD10TLJ223	22k ohms 1/8W Chip	1	
R237	ERD10TLJ273	27k ohms 1/8W Chip	1	
R238	ERDS2TJ821	820 ohms 1/8W Carbon	1	
R239	ERD10TLJ272	2.7k ohms 1/8W Chip	1	
R240	ERD10TLJ473	47k ohms 1/8W Chip	1	
R241	ERD10TLJ224	220k ohms 1/8W Chip	1	
R242	ERD10TLJ153	15k ohms 1/8W Chip	1	
R243	ERDS2TJ102	1k ohms 1/8W Carbon	1	
R244	ERD10TLJ122	1.2k ohms 1/8W Chip	1	
R245	ERD10TLJ822	8.2k ohms 1/8W Chip	1	
R246	ERD10TLJ822	8.2k ohms 1/8W Chip	1	
R247	ERD10TLJ1R0	1 ohm 1/8W Chip	1	
R248	ERD10TLJ152	1.5k ohms 1/8W Chip	1	
R249	ERD10TLJ4R7	4.7 ohms 1/8W Chip	1	
R250	ERD10TLJ4R7	4.7 ohms 1/8W Chip	1	
R251	ERD10TLJ104	100k ohms 1/8W Chip	1	
R252	ERD10TLJ103	10k ohms 1/8W Chip	1	
R253	ERD10TLJ472	4.7k ohms 1/8W Chip	1	
R254	ERD10TLJ331	330 ohms 1/8W Chip	1	
R255	ERD10TLJ560	56 ohms 1/8W Chip	1	
R256	ERD10TLJ473	47k ohms 1/8W Chip	1	
R257	ERD10TLJ103	10k ohms 1/8W Chip	1	
R271	ERD10TLJ102	1k ohms 1/8W Chip	1	
R272	ERDS2TJ222	2.2k ohms 1/8W Carbon	1	
R316	ERD10TLJ103	10k ohms 1/8W Chip	1	
R317	ERD25TJ152	1.5k ohms 1/4W Carbon	1	
R330	ERD10TLJ152	1.5k ohms 1/8W Chip	1	

Ref. No.	Part No.	Part Name & Description			Pcs Set	Remarks
R332	ERD10TLJ153	15k ohms	1/8W	Chip	1	
R333	ERDS2TJ392	3.9k ohms	1/8W	Carbon	1	
R334	ERD10TLJ273	27k ohms	1/8W	Chip	1	
R335	ERD10TLJ123	12k ohms	1/8W	Chip	1	
R336	ERD10TLJ223	22k ohms	1/8W	Chip	1	
R337	ERD10TLJ273	27k ohms	1/8W	Chip	1	
R338	ERD10TLJ102	1k ohms	1/8W	Chip	1	
R339	ERD10TLJ272	2.7k ohms	1/8W	Chip	1	
R340	ERD10TLJ473	47k ohms	1/8W	Chip	1	
R341	ERD10TLJ224	220k ohms	1/8W	Chip	1	
R342	ERD10TLJ153	15k ohms	1/8W	Chip	1	
R343	ERD10TLJ102	1k ohms	1/8W	Chip	1	
R344	ERD10TLJ122	1.2k ohms	1/8W	Chip	1	
R345	ERDS2TJ822	8.2k ohms	1/8W	Carbon	1	
R346	ERD10TLJ822	8.2k ohms	1/8W	Chip	1	
R347	ERD10TLJ1R0	1 ohm	1/8W	Chip	1	
R348	ERD10TLJ152	1.5k ohms	1/8W	Chip	1	
R349	ERD10TLJ4R7	4.7 ohms	1/8W	Chip	1	
R350	ERD10TLJ4R7	4.7 ohms	1/8W	Chip	1	
R351	ERD10TLJ104	100k ohms	1/8W	Chip	1	
R352	ERD10TLJ103	10k ohms	1/8W	Chip	1	
R353	ERD10TLJ472	4.7k ohms	1/8W	Chip	1	
R354	ERD10TLJ331	330 ohms	1/8W	Chip	1	
R355	ERD10TLJ560	56 ohms	1/8W	Chip	1	
R356	ERD10TLJ473	47k ohms	1/8W	Chip	1	
R357	ERDS2TJ103	10k ohms	1/8W	Carbon	1	
R371	ERD10TLJ102	1k ohms	1/8W	Chip	1	
R372	ERD10TLJ222	2.2k ohms	1/8W	Chip	1	
R701	ERDS2TJ560	56 ohms	1/8W	Carbon	1	
R702	ERD25FJ5R6	5.6 ohms	1/4W	Carbon	1	
R703	ERD10TLJ471	470 ohms	1/8W	Chip	1	
R704	ERD25FJ1R0	1 ohm	1/4W	Carbon	1	
R705	ERDS2TJ560	56 ohms	1/8W	Carbon	1	
R706	ERDS2TJ103	10k ohms	1/8W	Carbon	1	
R707	ERD10TLJ473	47k ohms	1/8W	Chip	1	
R708	ERDS2TJ102	1k ohms	1/8W	Carbon	1	
R710	ERD10TLJ473	47k ohms	1/8W	Chip	1	
R711	ERD10TLJ102	1k ohms	1/8W	Chip	1	
R712	ERD10TLJ473	47k ohms	1/8W	Chip	1	
R713	ERD10TLJ102	1k ohms	1/8W	Chip	1	
R715	ERD10TLJ473	47k ohms	1/8W	Chip	1	
R716	ERD10TLJ102	1k ohms	1/8W	Chip	1	
R718	ERD10TLJ102	1k ohms	1/8W	Chip	1	
R719	ERDS2TJ391	390 ohms	1/8W	Carbon	1	
R720	ERD10TLJ822	8.2k ohms	1/8W	Chip	1	
R721	ERDS2TJ181	180 ohms	1/8W	Carbon	1	
R722	ERDS2TJ103	10k ohms	1/8W	Carbon	1	
R723	ERD10TLJ122	1.2k ohms	1/8W	Chip	1	
R724	ERD10TLJ103	10k ohms	1/8W	Chip	1	
R725	ERDS2TJ122	1.2k ohms	1/8W	Carbon	1	
R726	ERD10TLJ103	10k ohms	1/8W	Chip	1	
R727	ERDS2TJ222	2.2k ohms	1/8W	Carbon	1	
R728	ERD10TLJ393	39k ohms	1/8W	Chip	1	
R772	ERD10TLJ104	100k ohms	1/8W	Chip	1	CQ-978EG only
R773	ERD10TLJ563	56k ohms	1/8W	Chip	1	CQ-978EG only
R774	ERD10TLJ474	470k ohms	1/8W	Chip	1	CQ-978EG only
R775	ERD10TLJ472	4.7k ohms	1/8W	Chip	1	CQ-978EG only
R776	ERD10TLJ224	220k ohms	1/8W	Chip	1	CQ-978EG only
R777	ERD10TLJ224	220k ohms	1/8W	Chip	1	CQ-978EG only
R778	ERDS2TJ224	220k ohms	1/8W	Carbon	1	CQ-978EG only
R779	ERDS2TJ224	220k ohms	1/8W	Carbon	1	CQ-978EG only
R780	ERDS2TJ103	10k ohms	1/8W	Carbon	1	CQ-978EG only
R781	ERDS2TJ562	5.6k ohms	1/8W	Carbon	1	CQ-978EG only
R782	ERD10TLJ562	5.6k ohms	1/8W	Chip	1	CQ-978EG only
R801	ERD25TJ104	100k ohms	1/4W	Carbon	1	
R802	ERD25TJ104	100k ohms	1/4W	Carbon	1	
R803	ERDS2TJ104	100k ohms	1/8W	Carbon	1	
R804	ERD10TLJ103	10k ohms	1/8W	Chip	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
R805	ERDS2TJ104	100k ohms 1/8W Carbon	1	
R806	ERD10TLJ392	3.9k ohms 1/8W Chip	1	CQ-978EG only
R807	ERDS2TJ104	100k ohms 1/8W Carbon	1	
R808	ERDS2TJ104	100k ohms 1/8W Carbon	1	
R809	ERD10TLJ104	100k ohms 1/8W Chip	1	
R810	ERD10TLJ104	100k ohms 1/8W Chip	1	
R812	ERD10TLJ102	1k ohms 1/8W Chip	1	
R813	ERD10TLJ473	47k ohms 1/8W Chip	1	
R814	ERD10TLJ473	47k ohms 1/8W Chip	1	
R815	ERDS2TJ101	100 ohms 1/8W Carbon	1	
R816	ERDS1FJ331	330 ohms 1W Carbon	1	
R817	ERD10TLJ472	4.7k ohms 1/8W Chip	1	
R818	ERD10TLJ471	470 ohms 1/8W Chip	1	
R819	ERD10TLJ152	1.5k ohms 1/8W Chip	1	
R820	ERD10TLJ152	1.5k ohms 1/8W Chip	1	
R821	ERD10TLJ473	47k ohms 1/8W Chip	1	
R822	ERD10TLJ152	1.5k ohms 1/8W Chip	1	
R823	ERDS2TJ473	47k ohms 1/8W Carbon	1	
R824	ERDS2TJ472	4.7k ohms 1/8W Carbon	1	
R825	ERDS2TJ152	1.5k ohms 1/8W Carbon	1	
R826	ERD10TLJ222	2.2k ohms 1/8W Chip	1	
R827	ERD10TLJ104	100k ohms 1/8W Chip	1	
R828	ERD10TLJ123	12k ohms 1/8W Chip	1	
R829	ERD25TJ104	100k ohms 1/4W Carbon	1	
R830	ERD10TLJ473	47k ohms 1/8W Chip	1	
R835	ERDS2TJ104	100k ohms 1/8W Carbon	1	
J11	ERD10TLJ101	100 ohms 1/8W Chip	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
		TAPE BLOCK		
R1 to 3	ERJ8GCJ102	1k ohms 1/8W Chip	3	
R4, 5	ERD10TLJ124	120k ohms 1/8W Chip	2	TR2, 3 Rank A
R4, 5	ERD10TLJ224	220k ohms 1/8W Chip	2	TR2, 3 Rank B
R7	ERJ8GCJ474	470k ohms 1/8W Chip	1	
R8	ERJ8GCJ154	150k ohms 1/8W Chip	1	
R9	ERJ8GCJ105	1M ohms 1/8W Chip	1	
R10, 11	ERJ8GCJ474	470k ohms 1/8W Chip	2	
R12	ERJ8GCJ154	150k ohms 1/8W Chip	1	
R13	ERJ8GCJ105	1M ohms 1/8W Chip	1	
R51 to 54	ERDS2TJ563	56k ohms 1/8W Carbon	4	
R55	ERDS2TJ334	330k ohms 1/8W Carbon	1	
R56	ERJ8GCJ121	120 ohms 1/8W Chip	1	
R57	ERDS2TJ123	12k ohms 1/8W Carbon	1	
R58	ERDS2TJ183	18k ohms 1/8W Carbon	1	
R59	ERJ8GCJ121	120 ohms 1/8W Chip	1	
R60	ERJ8GCJ334	330k ohms 1/8W Chip	1	
R61	ERDS2TJ183	18k ohms 1/8W Carbon	1	
R62	ERDS2TJ123	12k ohms 1/8W Carbon	1	
R215	ERDS2TJ103	10k ohms 1/8W Carbon	1	
R216	ERDS2TJ152	1.5k ohms 1/8W Carbon	1	
R217	ERDS2TJ224	220k ohms 1/8W Carbon	1	
R218	ERDS2TJ330	33 ohms 1/8W Carbon	1	
R219	ERDS2TJ331	330 ohms 1/8W Carbon	1	
R220	ERDS2TJ332	3.3k ohms 1/8W Carbon	1	
R221	ERDS2TJ153	15k ohms 1/8W Carbon	1	
R222	ERDS2TJ332	3.3k ohms 1/8W Carbon	1	
R223	ERD10TLJ473	47k ohms 1/8W Chip	1	
R224	ERD10TLJ622	6.2k ohms 1/8W Chip	1	
R225	ERD10TLJ104	100k ohms 1/8W Chip	1	
R226	ERD10TLJ563	56k ohms 1/8W Chip	1	
R227	ERDS2TJ822	8.2k ohms 1/8W Carbon	1	
R315	ERDS2TJ153	15k ohms 1/8W Carbon	1	

MODELS CQ-977EE/EG, CQ-978EG

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
R316	ERD10TLJ333	33k ohms 1/8W Chip	1	
R317	ERD10TLJ221	220 ohms 1/8W Chip	1	
R320	ERDS2TJ332	3.3k ohms 1/8W Carbon	1	
R321	ERDS2TJ153	15k ohms 1/8W Carbon	1	
R322	ERD10TLJ332	3.3k ohms 1/8W Chip	1	
R323	ERDS2TJ473	47k ohms 1/8W Carbon	1	
R324	ERD10TLJ622	6.2k ohms 1/8W Chip	1	
R325	ERD10TLJ104	100k ohms 1/8W Chip	1	
R326	ERD10TLJ563	56k ohms 1/8W Chip	1	
R327	ERDS2TJ822	8.2k ohms 1/8W Carbon	1	
R651	ERD10TLJ562	5.6k ohms 1/8W Chip	1	
R653	ERD10TLJ562	5.6k ohms 1/8W Chip	1	
R654	ERD10TLJ473	47k ohms 1/8W Chip	1	
R656	ERD10TLJ105	1M ohms 1/8W Chip	1	
R657	ERD10TLJ473	47k ohms 1/8W Chip	1	CQ-977EE/EG only
R658	ERD10TLJ473	47k ohms 1/8W Chip	1	
R659	ERD10TLJ562	5.6k ohms 1/8W Chip	1	
R660	ERD10TLJ562	5.6k ohms 1/8W Chip	1	
R661	ERD10TLJ103	10k ohms 1/8W Chip	1	
R662	ERD10TLJ103	10k ohms 1/8W Chip	1	
R663	ERD10TLJ103	10k ohms 1/8W Chip	1	
R664	ERD10TLJ103	10k ohms 1/8W Chip	1	
R665	ERD10TLJ391	390 ohms 1/8W Chip	1	
R666	ERX1SJ1R5	1.5 ohms 1W Metal Film	1	
R668	ERD10TLJ103	10k ohms 1/8W Chip	1	
R751	ERDS2TJ222	2.2k ohms 1/8W Carbon	1	CQ-978EG only
R752	ERD10TLJ823	82k ohms 1/8W Chip	1	CQ-978EG only
R753	ERD10TLJ124	120k ohms 1/8W Chip	1	CQ-978EG only
R754	ERD10TLJ221	220 ohms 1/8W Chip	1	CQ-978EG only
R755	ERDS2TJ154	150k ohms 1/8W Carbon	1	CQ-978EG only
R756	ERDS2TJ563	56k ohms 1/8W Carbon	1	CQ-978EG only
R757	ERDS2TJ682	6.8k ohms 1/8W Carbon	1	CQ-978EG only
R758	ERD10TLJ104	100k ohms 1/8W Chip	1	CQ-978EG only
R759	ERD10TLJ123	12k ohms 1/8W Chip	1	CQ-978EG only
R760	ERD10TLJ823	82k ohms 1/8W Chip	1	CQ-978EG only
R761	ERD10TLJ104	100k ohms 1/8W Chip	1	CQ-978EG only
R762	ERDS2TJ394	390k ohms 1/8W Carbon	1	CQ-978EG only
R763	ERDS2TJ332	3.3k ohms 1/8W Carbon	1	CQ-978EG only
R764	ERDS2TJ332	3.3k ohms 1/8W Carbon	1	CQ-978EG only
R765	ERDS2TJ560	56 ohms 1/8W Carbon	1	CQ-978EG only
R766	ERDS2TJ151	150 ohms 1/8W Carbon	1	CQ-978EG only
R767	ERDS2TJ222	2.2k ohms 1/8W Carbon	1	CQ-978EG only
R768	ERD10TLJ473	47k ohms 1/8W Chip	1	CQ-978EG only
R769	ERD10TLJ563	56k ohms 1/8W Chip	1	CQ-978EG only
R770	ERDS2TJ473	47k ohms 1/8W Carbon	1	CQ-978EG only
R772	ERDS2TJ332	3.3k ohms 1/8W Carbon	1	CQ-978EG only

INDICATOR BLOCK

R50	ERDS2TJ180	180 ohms 1/8W Carbon	1	

VARIABLE CAPACITORS

C18	YECTZB4N100B	10 PF	Trimmer	1	
C62	YECTZB4Z060B	6 PF	Trimmer	1	
C78, 85, 88	YECTZ3R200FR	20 PF	Trimmer	3	
C95	YECTZ3R900FR	90 PF	Trimmer	1	
C99	YECTZB100B	10 PF	Trimmer	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
VARIABLE RESISTORS				
VR2	EVNC3AA00B14	10k ohms IF Sensitivity	1	
VR3	EVNC3AA00B14	10k ohms 19 kHz MPX Alignment	1	
VR4	EVNC3AA00B23	2k ohms FM Separation	1	
VR7	EVNC3AA00B14	10k ohms Voltage Control	1	
VR8	EVNC3AA00B15	100k ohms Mute	1	
VR201, 301	EVNB1AA00B54	50k ohms Dolby	2	
VR231, 331	YEVK12EG001	Volume Control 100 ohms	1	
232, 332		Fader Control 50k ohms		
235		Balance Control 50k ohms		
w/SW701, 801		Power Switch, Seek Switch		
VR233, 333	YEVA102A001	Tone Control (BASS) 100k ohms	1	
VR234, 334	YEVA102A001	Tone Control (TRE) 100k ohms	1	
VR801	EVND4AA00B15	100k ohms	1	
LCD				
LCD	YEXDCM772	LCD Ass'y	1	
SWITCHES				
SW12	EVQQL307M	Loudness Switch	1	
SW1 ~ 11	YEAS09199	Preset, MU/FF, MD/REW, LW(BAND), MW(BK)	14	The ( ) showes CQ-978EG
13, 14, 15		FM(DK), LOC/TPS, MUNO/PRG, STOP/EJ		

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
COILS, TRANSFORMERS AND CERAMIC FILTERS				
L1	YELQ07S046	AM ANT Coil	1	
L2	YELA07S081	LW RF Coil	1	
L3	YELA07S118	AM RF Coil	1	
L4	YELA07S081	AM RF Coil	1	
L5	YELT07S077	AM RF Coil	1	
L6	YELA7S081	LW RF Coil	1	
L7	YELL07S128	AM OSC Coil	1	
L8	YELL07S152	LW OSC Coil	1	
L9	YELT05N101KT	AM RF Coil	1	
L701	YETQ026F048A	Choke Coil	1	
IFT1	YEIF07S7080	FM IF Coil	1	
IFT2	YEIF07S7083A	FM IF Coil	1	
IFT3	YEIA07S7124	AM IF Coil	1	
CF1, 2	YEIN09N5016	FM Ceramic Filter	2	
CF3	YEIN09N5049	FM Ceramic Filter	1	
CF4	YEIN08N5032	AM Ceramic Filter	1	
CF5	YEIN05N5048A	AM Ceramic Filter	1	
CF801	YEIN05N5048A	AM Ceramic Filter	1	
J2	YELA02A120	Antenna Coil	1	
CRYSTALS				
X651	YEXLCSB400P	400 kHz	1	
X751	YEXLSB456F13	456 kHz	1	
X801	YEXL49N04500	4.5 MHz	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
		INSTALLATION PARTS		
A101	YEFG04010A	Supporting Strap	1	
A102	YEFX999440	U Bracket (Jig for Remove)	2	
A103	YEFS01174	Rubber Pad	1	
A104	XVG5C25FXS	Bolt, Hexagon 5 mmϕ x 25 mm	1	
A105	XWA5BFX	Washer Spring 5 mmϕ	2	
A106	XWG5FX	Washer, Flat	2	
A107	XNG5AFXS	Nut, Hexagon	2	
A108	XWC5CFX	Washer, Toothed	1	
A109	YEFX0211710	Mounting Case	1	
		PRINTINGS		
A110	YEFM28859	Instruction Book (English/German/French)	1	CQ-978EG only
A111	YEFM99188A	VF Map	1	CQ-978EG only
A112	YEFM28860	Instruction Book (English)	1	CQ-977EE only
A113	YEFM28861	Instruction Book (English/French/Dutch/Swedish)	1	CQ-977EG only

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